GSM TELEPHONE
SGH-C160

SERVICE Manual

GSM TELEPHONE



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1. Safety Precautions

1-1. Repair Precaution

- Repair in Shield Box, during detailed tuning.
  Take specially care of tuning or test, because the specification of cellular phone is sensitive for surrounding interference(RF noise).

- Be careful to use a kind of magnetic object or tool, because performance of parts is damaged by the influence of magnetic force.

- Surely use a standard screwdriver when you disassemble this product, otherwise screw will be worn away.

- Use a thicken twisted wire when you measure level.
  A thicken twisted wire has low resistance, therefore error of measurement is few.

- Repair after separate Test Pack and Set because for short danger (for example an overcurrent and furious flames of parts etc) when you repair board in condition of connecting Test Pack and tuning on.

- Take specially care of soldering, because Land of PCB is small and weak in heat.

- Surely tune on/off while using AC power plug, because a repair of battery charger is dangerous when tuning ON/OFF PBA and Connector after disassembling charger.

- Don't use as you pleases after change other material than replacement registered on SEC System.
  Otherwise engineer in charge isn't charged with problem that you don't keep this rules.

1-2. ESD(Electrostatically Sensitive Devices) Precaution

Several semiconductor may be damaged easily by static electricity. Such parts are called by ESD (Electrostatically Sensitive Devices), for example IC,BGA chip etc. Read Precaution below. You can prevent from ESD damage by static electricity.

- Remove static electricity remained your body before you touch semiconductor or parts with semiconductor. There are ways that you touch an earthed place or wear static electricity prevention string on wrist.

- Use earthed soldering steel when you connect or disconnect ESD.

- Use soldering removing tool to break static electricity. , otherwise ESD will be damaged by static electricity.

- Don't unpack until you set up ESD on product. Because most of ESD are packed by box and aluminum plate to have conductive power,they are prevented from static electricity.

- You must maintain electric contact between ESD and place due to be set up until ESD is connected completely to the proper place or a circuit board.

2. Specification

2-1. GSM General Specification

	EGSM 900	DCS1800
Freq. Band[MHz] Uplink/Downlink	880~915 925~960	1710~1785 1805~1880
ARFCN range	0~124 & 975~1023	512~885
Tx/Rx spacing	45MHz	95MHz
Mod. Bit rate/ Bit Period	270.833kbps 3.692us	270.833kbps 3.692us
Time Slot Period/Frame Period	576.9us 4.615ms	576.9us 4.615ms
Modulation	0.3GMSK	0.3GMSK
MS Power	33dBm~5dBm	30dBm~0dBm
Power Class	4 (max +33dBm)	1 (max +30dBm)
Sensitivity	-102dBm	-100dBm
TDMA Mux	8	8
Cell Radius	35Km	2Km

2-2. GSM TX power class

TX Power control level	GSM900
5	33±2 dBm
6	31±2 dBm
7	29±2 dBm
8	27±2 dBm
9	25±2 dBm
10	23±2 dBm
11	21±2 dBm
12	19±2 dBm
13	17±2 dBm
14	15±2 dBm
15	13±2 dBm
16	11±3 dBm
17	9±3dBm
18	7±3 dBm
19	5±3 dBm

TX Power control level	DCS1800
0	30±3 dBm
1	28±3 dBm
2	26±3 dBm
3	24±3 dBm
4	22±3 dBm
5	20±3 dBm
6	18±3 dBm
7	16±3 dBm
8	14±3 dBm
9	12±4 dBm
10	10±4 dBm
11	8±4dBm
12	6±4 dBm
13	4±4 dBm
14	2±5 dBm
15	0±5 dBm

3. Product Function

Main Function

- DC-Jack TA (700mA)
- No Java
- No MMS
- FM radio
- WAP 2.0
- 10 Poly S/W MIDI
- Dual band(900/1800MHz)
- GPRS Class 10

4. Array course control

4-1. Software Adjustments



1. JIG Box: Download, Trace, Calibration, etc
2. RF test cable: RF test
3. Test cable: JIG to phone
4. Serial cable: PC to JIG
5. TA (Travel Adaptor)
6. Download JIG: Download, Calibration

4-2. Software Downloading

4-2-1. Downloading Binary Files

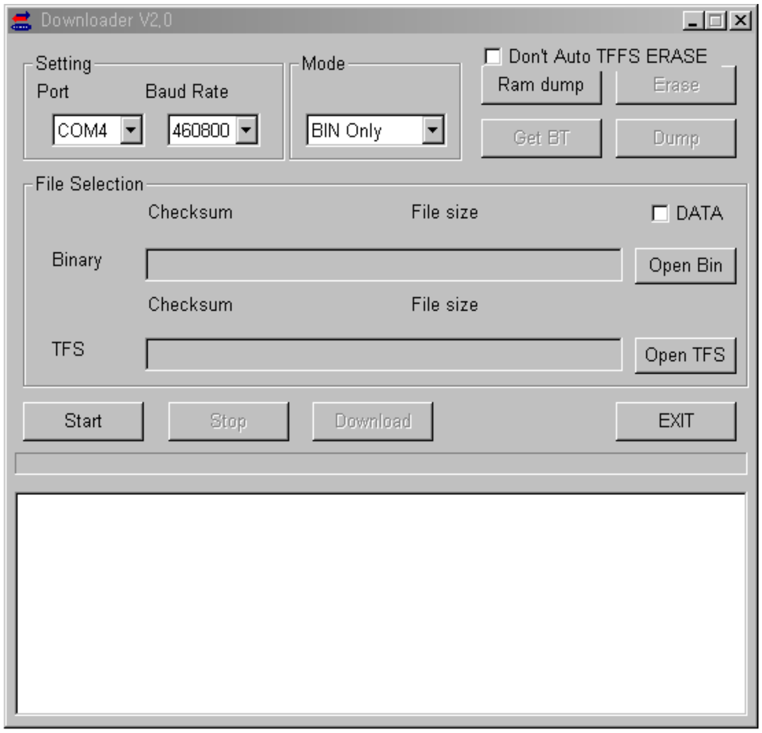
- 2 binary files for downloading C160.
  - C160XXXX0.cls
  - C160XXXX0.tfs

4-2-2. Pre-requsite for Downloading

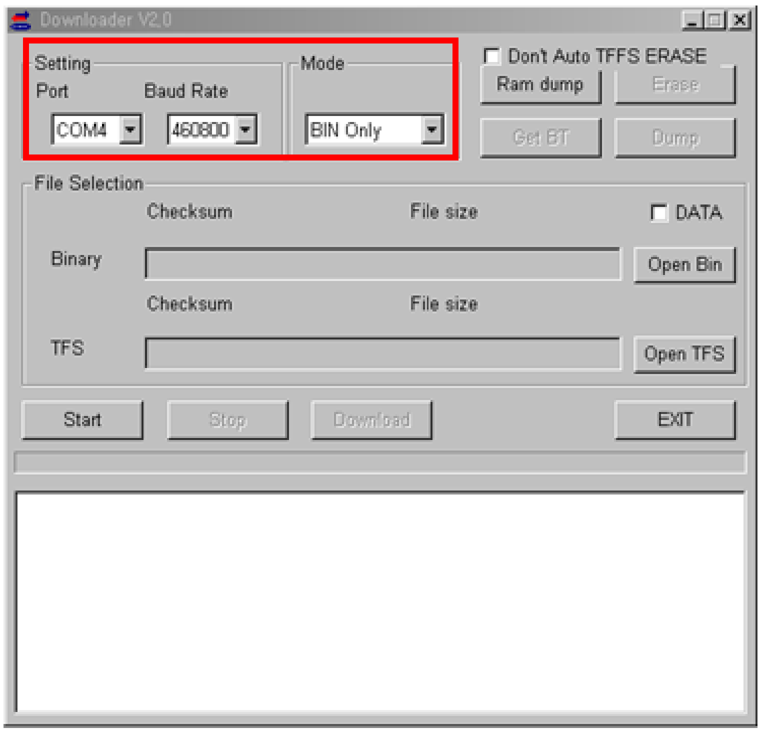
- Downloader Program(**Virtuous 64X32 Downloader_PAGESIZE256_6A0000.exe**)
- SGH-C160 Mobile Phone
- JIG BOX
- Download JIG
- Test Cable
- Serial Cable
- Binary files

4-2-3. S/W Downloader Program

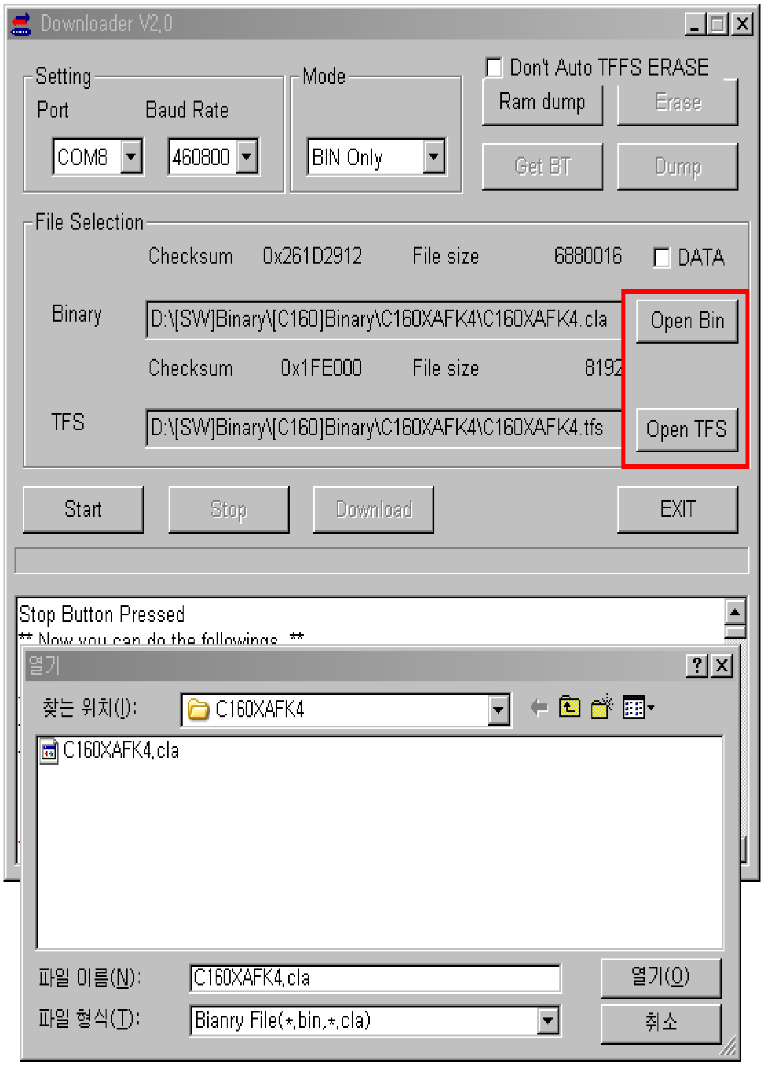
1. Load the binary download program by executing the "**Virtuous 64X32 Downloader v2.exe**".



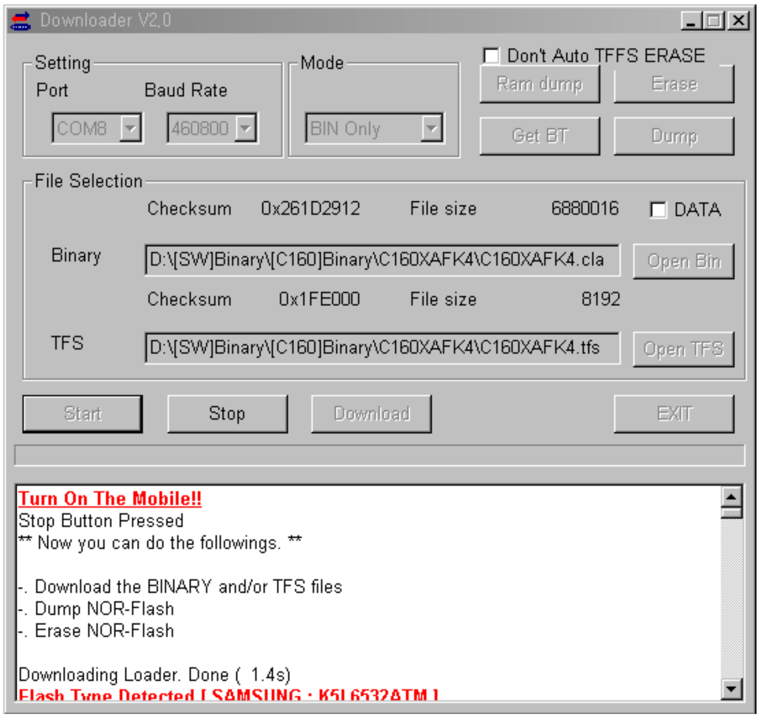
2. Select the Port, Baud Rate and Mode.



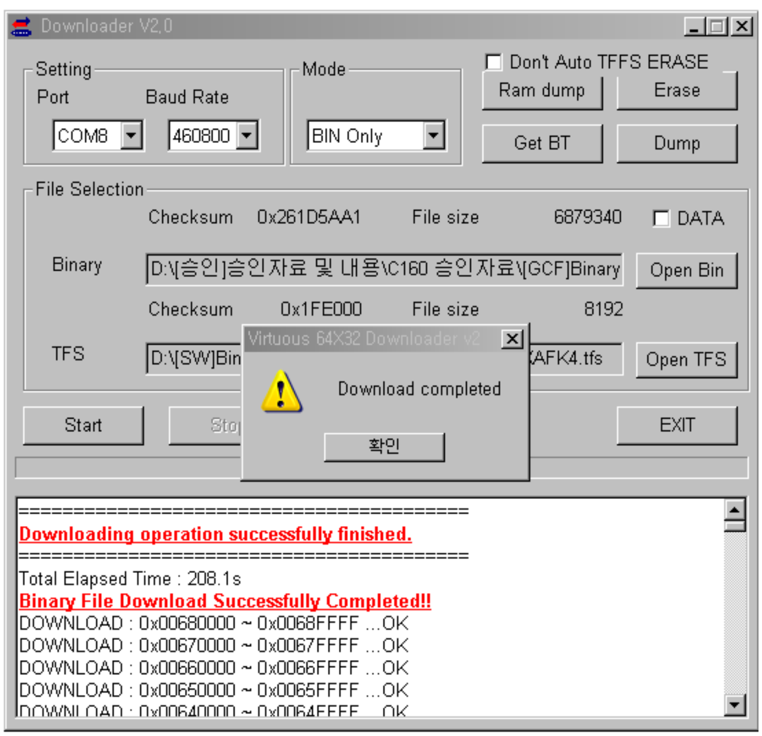
3. Select the binary files what you want to download



4. Press the "Start" button and connect the Handset

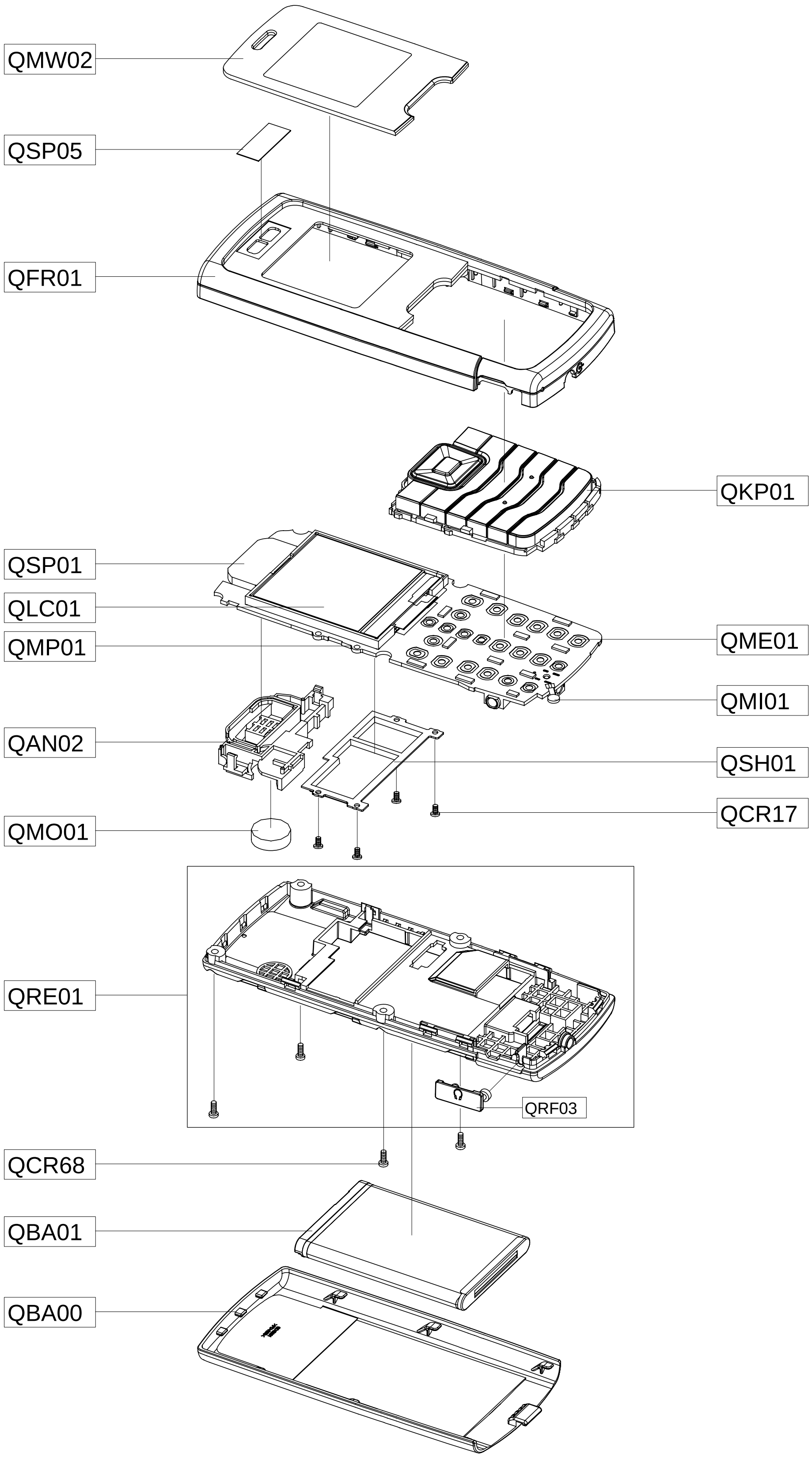


5. When downloading is complete, automatically the small window was showed up..



5. Exploded View/Disassembly&Assembly Instructions

5-1. Cellular phone Exploded View



5-2. Cellular phone Parts list

Design LOC		Description	Sec Code
QAN02		INTENNA-SGHC160	GH42-01137A
QBA00		PMO-COVER BATTERY V3	GH72-37763A
QBA01		INNER BATTERY PACK-750MAH,BLK,	GH43-02483A
QCR17		SCREW-MACHINE	6001-001460
QCR68		SCREW-TAPPING	6002-001399
QFR01		ASSY CASE-FRONT	GH98-04750A
QKP01		ASSY KEYPAD-(EU/BLK)	GH98-04064A
QLC01		LCD-LCD MODULE	GH07-01056A
QME01		UNIT-METAL DOME	GH59-03976A
QMI01		MICROPHONE-ASSY-SGHC160	GH30-00177H
QMO01		MOTOR DC-SGHC160	GH31-00296A
QMP01		PBA MAIN-SGHC160	GH92-03379A
QMW02		PCT-COVER WINDOW MAIN V4	GH72-39450A
QSH01		ASSY BRACKET-SHIELD CAN	GH98-04066A
QSP01		SPEAKER	3001-002100
QSP05		ASSY DECO-SPK GRILL	GH98-04853A
QRE01		ASSY CASE-REAR	GH98-03096A
	QRF03	PMO-COVER EAR V3	GH72-37762A

Description	Sec Code
BAG PE	6902-000634
ADAPTOR-SGHC140 DC JACK(EU_B	GH44-01597A
UNIT-EARPHONE,10P,BLK(EU)	GH59-04003A
LABEL(P)-IMEI	GH68-01335D
LABEL(R)-WATER SOAK	GH68-09361A
MANUAL USERS-SFC CARD(LATV)	GH68-13476A
LABEL(R)-MAIN(EU)	GH68-14194A
MANUAL USERS-EU ESTONIAN	GH68-14262A
MANUAL USERS-EU LATVIAN	GH68-14263A
MANUAL USERS-EU LITHUANIAN	GH68-14264A
BOX(P)-UNIT(EU)	GH69-05175A
MPR-VINYL BOHO FRONT	GH74-31440A
MPR-VINYL BOHO WINDOW	GH74-31711A
TAPE-MAIN WINDOW	GH74-32184A

5-3. Disassembly and Assembly Instructions

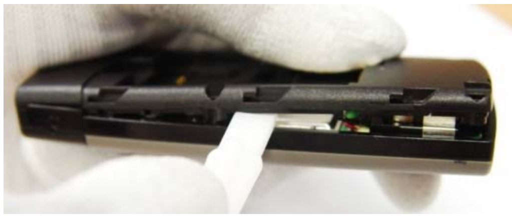
5-3-1. Disassembly

1 1) Unfasten rear 4 screws.



Notice 1)
Don't leave any scratch or spot on structure.

2 1) After disassemble both side lockers, separate the FRONT & REAR.





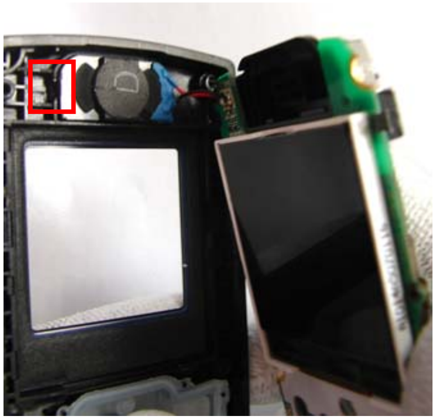
Notice 1)
Don't leave any scratch or spot on structure.

3 Disassemble a locker on PBA.



Notice 1)
Don't damage any parts.

4 Disassemble a speaker using tweezers.



Notice 1)
Don't damage speaker & wire.

5-3-2. Assembly

1

1) Reach in good condition a KEYPAD on FRONT structure.



Notice 1)
Reach in good condition holes around the 3*4 KET on FRONT structure.

2

1) Insert speaker & LCD on FRONT structure.



Notice 1)
Don't stain any bow on LCD.
Notice 2)
Don't be down the speaker wire.

3

1) After pull out the earjack cover, assemble first the top & after the lower locker.



Notice 1)
Don't leave any scratch or spot on structure.

4

1) Fasten rear 4 screws.



Notice 1)
Don't leave any scratch or spot on structure.

6. MAIN Electrical Parts List

Design LOC	Description	SEC Code	STATUS
BTC300	HEADER-BATTERY	3711-006228	SA
C100	C-CER,CHIP	2203-005050	SA
C102	C-CER,CHIP	2203-000425	SA
C103	C-CER,CHIP	2203-006048	SA
C104	C-CER,CHIP	2203-005050	SA
C105	C-CER,CHIP	2203-006361	SA
C106	C-CER,CHIP	2203-000812	SA
C107	C-CER,CHIP	2203-000812	SA
C108	C-CER,CHIP	2203-000812	SA
C109	C-CER,CHIP	2203-000489	SA
C110	C-CER,CHIP	2203-000278	SA
C111	C-CER,CHIP	2203-000854	SA
C112	C-CER,CHIP	2203-000278	SA
C113	C-CER,CHIP	2203-001607	SA
C114	C-CER,CHIP	2203-001259	SA
C115	C-CER,CHIP	2203-001397	SA
C116	C-CER,CHIP	2203-001259	SA
C117	C-CER,CHIP	2203-001017	SA
C118	C-CER,CHIP	2203-006048	SA
C119	C-CER,CHIP	2203-006048	SA
C120	C-CER,CHIP	2203-000233	SA
C121	C-CER,CHIP	2203-000854	SA
C122	C-CER,CHIP	2203-000278	SA
C123	C-CER,CHIP	2203-006562	SA
C125	C-CER,CHIP	2203-001153	SA
C126	C-CER,CHIP	2203-000254	SA
C127	C-CER,CHIP	2203-005234	SA
C128	C-CER,CHIP	2203-000233	SA
C129	C-CER,CHIP	2203-005446	SA
C130	C-CER,CHIP	2203-005446	SA
C131	C-CER,CHIP	2203-005446	SA
C132	C-CER,CHIP	2203-001153	SA
C133	C-CER,CHIP	2203-000254	SA
C134	C-CER,CHIP	2203-000278	SA
C135	C-CER,CHIP	2203-000854	SA
C136	C-CER,CHIP	2203-000679	SA
C137	C-CER,CHIP	2203-000278	SA
C138	C-CER,CHIP	2203-006681	SA
C139	C-CER,CHIP	2203-005234	SA
C140	C-CER,CHIP	2203-000995	SA
C143	C-CER,CHIP	2203-005234	SA
C144	C-CER,CHIP	2203-000679	SA
C145	C-CER,CHIP	2203-000995	SA
C201	C-CER,CHIP	2203-006562	SA
C202	C-CER,CHIP	2203-005061	SA
C203	C-CER,CHIP	2203-005061	SA
C204	C-CER,CHIP	2203-005061	SA
C205	C-CER,CHIP	2203-005061	SA
C206	C-CER,CHIP	2203-000254	SA
C207	C-CER,CHIP	2203-005061	SA

Design LOC	Description	SEC Code	STATUS
C208	C-CER,CHIP	2203-005061	SA
C209	C-CER,CHIP	2203-000254	SA
C210	C-CER,CHIP	2203-000254	SA
C211	C-CER,CHIP	2203-005482	SA
C212	C-CER,CHIP	2203-005482	SA
C213	C-CER,CHIP	2203-000854	SA
C214	C-CER,CHIP	2203-000679	SA
C216	C-CER,CHIP	2203-005483	SA
C217	C-CER,CHIP	2203-005481	SA
C218	C-CER,CHIP	2203-005481	SA
C219	C-CER,CHIP	2203-005482	SA
C301	C-CER,CHIP	2203-005061	SA
C302	C-CER,CHIP	2203-005061	SA
C303	C-CER,CHIP	2203-005061	SA
C306	C-CER,CHIP	2203-000679	SA
C307	C-CER,CHIP	2203-005061	SA
C308	C-CER,CHIP	2203-000425	SA
C310	C-CER,CHIP	2203-000812	SA
C311	C-CER,CHIP	2203-005061	SA
C312	C-CER,CHIP	2203-000679	SA
C316	C-CER,CHIP	2203-005482	SA
C317	C-CER,CHIP	2203-000643	SA
C319	C-CER,CHIP	2203-000425	SA
C320	C-CER,CHIP	2203-001153	SA
C321	C-CER,CHIP	2203-005482	SA
C324	C-CER,CHIP	2203-005382	SA
C325	C-CER,CHIP	2203-000254	SA
C326	C-CER,CHIP	2203-001405	SA
C327	C-CER,CHIP	2203-005382	SA
C328	C-CER,CHIP	2203-005382	SA
C401	C-CER,CHIP	2203-006208	SA
C402	C-CER,CHIP	2203-000278	SA
C403	C-CER,CHIP	2203-006257	SA
C404	C-CER,CHIP	2203-000330	SA
C406	C-TA,CHIP	2404-001381	SA
C407	C-CER,CHIP	2203-000812	SA
C408	C-CER,CHIP	2203-006348	SA
C409	C-CER,CHIP	2203-006681	SA
C410	C-CER,CHIP	2203-006348	SA
C412	C-CER,CHIP	2203-006208	SA
C413	C-CER,CHIP	2203-006562	SA
C414	C-CER,CHIP	2203-006208	SA
C415	C-CER,CHIP	2203-006257	SA
C416	C-CER,CHIP	2203-006257	SA
C418	C-CER,CHIP	2203-006825	SA
C419	C-CER,CHIP	2203-005482	SA
C422	C-CER,CHIP	2203-006257	SA
C423	C-CER,CHIP	2203-006208	SA
C424	C-CER,CHIP	2203-006257	SA
C425	C-CER,CHIP	2203-006257	SA

Design LOC	Description	SEC Code	STATUS
C426	C-CER,CHIP	2203-005482	SA
C432	C-CER,CHIP	2203-005061	SA
C434	C-CER,CHIP	2203-000812	SA
C500	C-CER,CHIP	2203-006137	SA
C501	C-CER,CHIP	2203-000995	SA
C502	C-CER,CHIP	2203-000995	SA
C503	C-CER,CHIP	2203-005482	SA
C504	C-CER,CHIP	2203-000311	SA
C507	C-CER,CHIP	2203-000233	SA
C508	C-CER,CHIP	2203-006562	SA
C509	C-CER,CHIP	2203-006562	SA
C510	C-CER,CHIP	2203-006562	SA
C511	C-CER,CHIP	2203-006562	SA
C512	C-CER,CHIP	2203-006824	SA
C513	C-CER,CHIP	2203-006562	SA
C515	C-NETWORK	2503-001053	SA
C516	C-NETWORK	2503-001053	SA
C517	C-NETWORK	2503-001053	SA
C518	C-NETWORK	2503-001053	SA
C519	C-CER,CHIP	2203-006137	SA
C520	C-CER,CHIP	2203-006048	SA
C525	C-CER,CHIP	2203-005481	SA
C528	C-CER,CHIP	2203-005481	SA
C535	C-CER,CHIP	2203-006324	SA
D301	DIODE-TVS	0406-001150	SA
D400	DIODE-ARRAY	0407-001002	SA
D501	DIODE-TVS	0406-001223	SA
D502	DIODE-TVS	0406-001223	SA
DCJ301	JACK-DC POWER	3722-002433	SA
EAR300	JACK-EAR PHONE	3722-002010	SA
F101	FILTER-SAW	2904-001753	SA
F500	FILTER-EMI SMD	2901-001329	SA
L100	INDUCTOR-SMD	2703-002700	SA
L102	INDUCTOR-SMD	2703-001180	SA
L103	INDUCTOR-SMD	2703-002313	SA
L104	INDUCTOR-SMD	2703-002313	SA
L105	INDUCTOR-SMD	2703-002313	SA
L106	INDUCTOR-SMD	2703-002313	SA
L107	INDUCTOR-SMD	2703-002199	SA
L108	INDUCTOR-SMD	2703-002199	SA
L109	INDUCTOR-SMD	2703-002170	SA
L110	INDUCTOR-SMD	2703-002313	SA
L111	INDUCTOR-SMD	2703-002586	SA
L113	INDUCTOR-SMD	2703-002586	SA
L114	INDUCTOR-SMD	2703-002314	SA
L115	INDUCTOR-SMD	2703-002203	SA
L116	INDUCTOR-SMD	2703-002309	SA
L117	INDUCTOR-SMD	2703-002309	SA
L118	INDUCTOR-SMD	2703-002309	SA
L119	INDUCTOR-SMD	2703-002203	SA

Design LOC	Description	SEC Code	STATUS
L120	INDUCTOR-SMD	2703-002204	SA
L121	INDUCTOR-SMD	2703-002268	SA
L122	INDUCTOR-SMD	2703-002206	SA
L123	INDUCTOR-SMD	2703-002267	SA
L124	INDUCTOR-SMD	2703-002200	SA
L125	INDUCTOR-SMD	2703-002206	SA
L126	INDUCTOR-SMD	2703-002268	SA
L301	BEAD-SMD	3301-001729	SA
L302	BEAD-SMD	3301-001729	SA
L303	BEAD-SMD	3301-001729	SA
L304	BEAD-SMD	3301-001729	SA
L305	BEAD-SMD	3301-001729	SA
L307	INDUCTOR-SMD	2703-001513	SA
L308	BEAD-SMD	3301-001729	SA
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L310	BEAD-SMD	3301-001729	SA
L311	BEAD-SMD	3301-001729	SA
L312	BEAD-SMD	3301-001729	SA
L313	BEAD-SMD	3301-001729	SA
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L402	INDUCTOR-SMD	2703-002309	SA
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L501	INDUCTOR-SMD	2703-002313	SA
LED301	LED	0601-002199	SA
LED302	LED	0601-002199	SA
LED303	LED	0601-002199	SA
LED304	LED	0601-002199	SA
LED305	LED	0601-002199	SA
LED306	LED	0601-002199	SA
LED307	LED	0601-002199	SA
LED308	LED	0601-002199	SA
LED309	LED	0601-002199	SA
LED310	LED	0601-002199	SA
LED311	LED	0601-002199	SA
OSC400	CRYSTAL-SMD	2801-003856	SA
PAM101	IC-POWER AMP	1201-002490	SA
R101	C-CER,CHIP	2203-005444	SA
R102	R-CHIP	2007-007092	SA
R103	R-CHIP	2007-000982	SA
R104	R-CHIP	2007-007316	SA
R105	R-CHIP	2007-000171	SA
R106	R-CHIP	2007-000566	SA
R107	C-CER,CHIP	2203-000854	SA
R108	R-CHIP	2007-000148	SA
R109	INDUCTOR-SMD	2703-002281	SA
R110	R-CHIP	2007-000566	SA
R111	R-CHIP	2007-003001	SA
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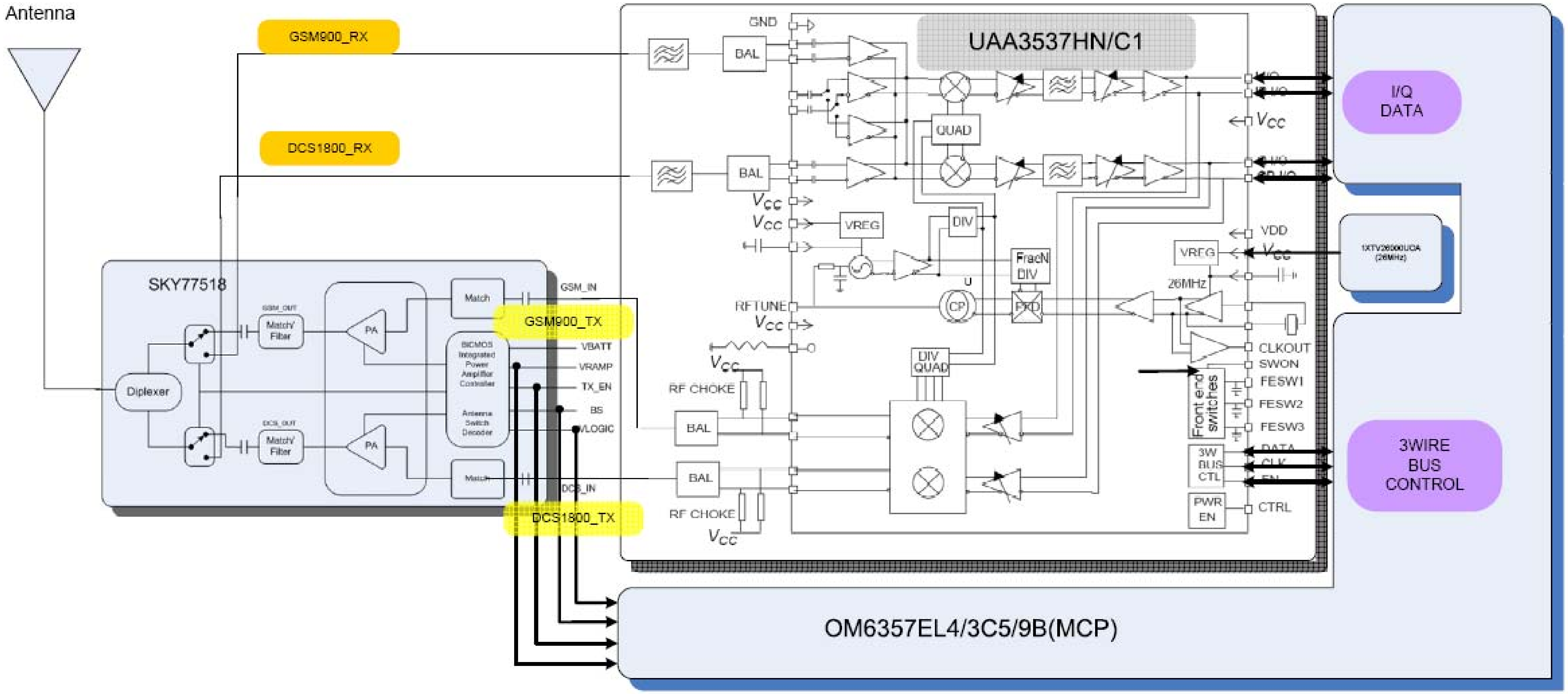
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R118	R-CHIP	2007-000932	SA
R119	R-CHIP	2007-000932	SA
R120	R-CHIP	2007-000143	SA
R121	R-CHIP	2007-000143	SA
R122	R-CHIP	2007-000171	SA
R123	R-CHIP	2007-000141	SA
R124	R-CHIP	2007-000148	SA
R210	R-CHIP	2007-000174	SA
R211	R-CHIP	2007-000171	SA
R212	R-CHIP	2007-000162	SA
R214	R-CHIP	2007-007107	SA
R215	R-CHIP	2007-000159	SA
R216	R-CHIP	2007-007142	SA
R217	R-CHIP	2007-007107	SA
R218	R-CHIP	2007-000162	SA
R219	R-CHIP	2007-000162	SA
R221	R-CHIP	2007-000162	SA
R228	R-CHIP	2007-000141	SA
R229	R-CHIP	2007-000141	SA
R233	R-CHIP	2007-000162	SA
R234	R-CHIP	2007-000143	SA
R302	R-CHIP	2007-007009	SA
R303	R-CHIP	2007-007009	SA
R315	R-CHIP	2007-000162	SA
R316	R-CHIP	2007-000162	SA
R317	R-CHIP	2007-000162	SA
R318	R-CHIP	2007-000171	SA
R319	R-CHIP	2007-000171	SA
R321	R-CHIP	2007-000148	SA
R323	R-CHIP	2007-000140	SA
R324	R-CHIP	2007-000140	SA
R325	R-CHIP	2007-002796	SA
R326	R-CHIP	2007-002796	SA
R327	R-CHIP	2007-000140	SA
R328	R-CHIP	2007-000140	SA
R332	R-CHIP	2007-003004	SA
R333	R-CHIP	2007-001288	SA
R334	R-CHIP	2007-003030	SA
R335	R-CHIP	2007-003030	SA
R336	R-CHIP	2007-000174	SA
R337	R-CHIP	2007-000174	SA
R338	R-CHIP	2007-003004	SA
R339	R-CHIP	2007-000174	SA
R340	R-CHIP	2007-003030	SA
R341	R-CHIP	2007-003030	SA
R342	R-CHIP	2007-000148	SA
R344	R-CHIP	2007-007573	SA

Design LOC	Description	SEC Code	STATUS
R345	R-CHIP	2007-007529	SA
R346	R-CHIP	2007-000162	SA
R347	R-CHIP	2007-001339	SA
R348	R-CHIP	2007-001317	SA
R349	R-CHIP	2007-000162	SA
R350	R-CHIP	2007-000174	SA
R401	R-CHIP	2007-007100	SA
R402	R-CHIP	2007-000170	SA
R403	R-CHIP	2007-007869	SA
R407	R-CHIP	2007-000171	SA
R408	R-CHIP	2007-000162	SA
R409	R-CHIP	2007-000171	SA
R410	R-CHIP	2007-001339	SA
R411	R-CHIP	2007-000758	SA
R412	R-CHIP	2007-002796	SA
R413	R-CHIP	2007-007573	SA
R417	R-CHIP	2007-007334	SA
R426	R-CHIP	2007-000148	SA
R501	R-CHIP	2007-000148	SA
R502	R-CHIP	2007-000171	SA
R504	R-CHIP	2007-000162	SA
R505	R-CHIP	2007-000140	SA
R506	R-CHIP	2007-000171	SA
R507	R-CHIP	2007-000171	SA
R513	R-CHIP	2007-000155	SA
R515	R-CHIP	2007-000172	SA
R516	R-CHIP	2007-000172	SA
RFS101	CONNECTOR-COAXIAL	3705-001358	SA
SIM400	CONNECTOR-CARD EDGE	3709-001400	SA
TA101	C-TA,CHIP	2404-001449	SA
TA301	C-TA,CHIP	2404-001424	SA
TA401	C-TA,CHIP	2404-001381	SA
TA402	C-TA,CHIP	2404-001381	SA
TA501	C-TA,CHIP	2404-001240	SA
TCX101	OSCILLATOR-VCTCXO	2809-001307	SA
TH200	THERMISTOR-NTC	1404-001221	SA
TR400	TR-POWER	0502-001116	SA
U100	IC-TRANSCEIVER	1205-002689	SA
U301	IC-VOLTAGE COMP.	1202-001068	SA
U400	IC-POWER SUPERVISOR	1203-004550	SA
U401	IC-POSI.FIXED REG.	1203-004338	SA
U500	IC-DC/DC CONVERTER	1203-003708	SA
U501	IC-TUNER	1204-002700	SA
U502	IC-AUDIO AMP	1201-002492	SA
U503	FET-SILICON	0505-001469	SA
UCP200	IC-COMM. CONTROLLER	1205-003192	SA
UME300	IC-MCP	1108-000103	SA
VR300	VARISTOR	1405-001082	SA
VR303	DIODE-TVS	0406-001223	SA
VR304	DIODE-TVS	0406-001223	SA

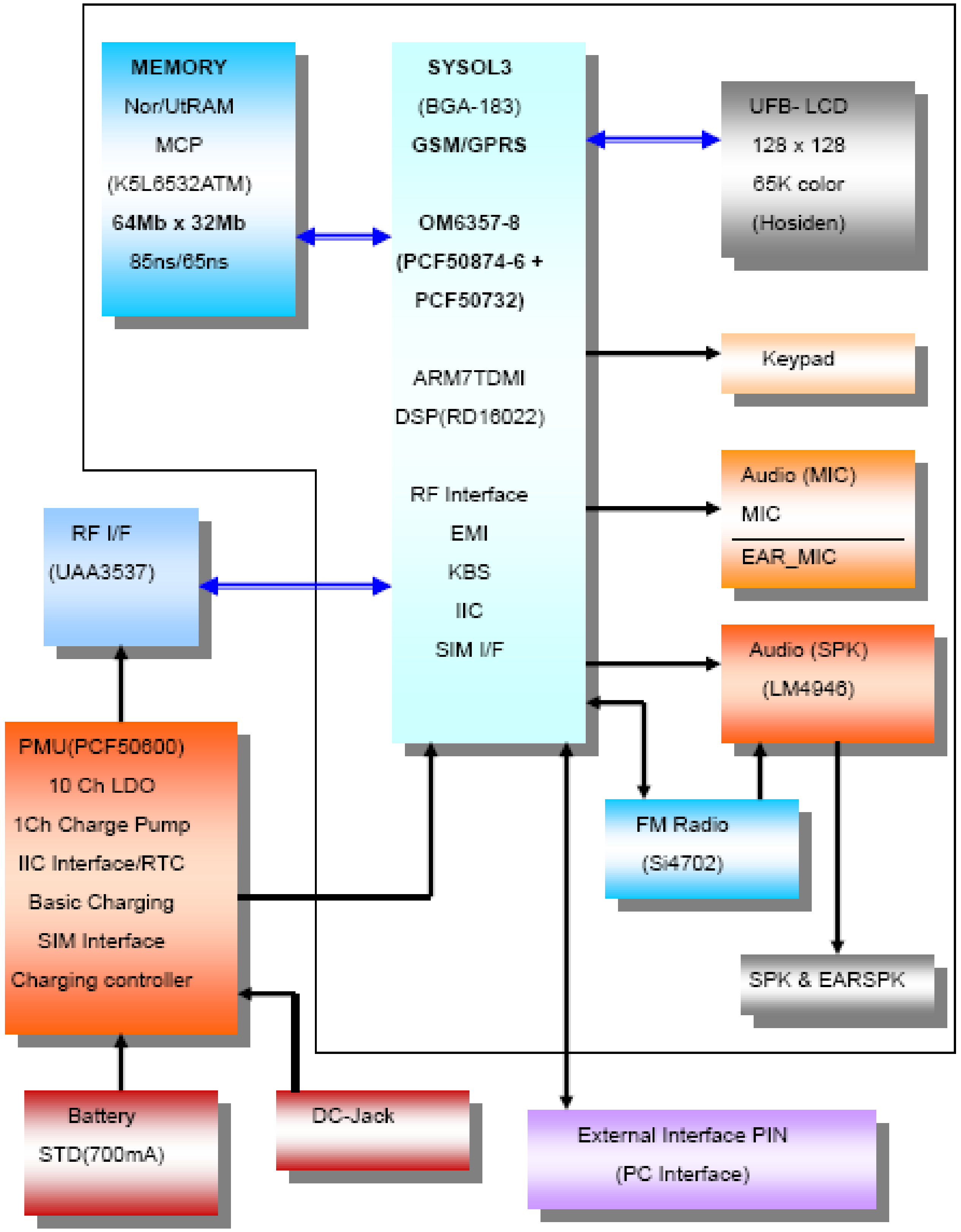
Design LOC	Description	SEC Code	STATUS
VR401	VARISTOR	1405-001082	SA
VR500	VARISTOR	1405-001082	SA
VR501	VARISTOR	1405-001082	SA
VR502	VARISTOR	1405-001082	SA
VR503	VARISTOR	1405-001082	SA
VR504	VARISTOR	1405-001082	SA
VR505	VARISTOR	1405-001082	SA
VR506	VARISTOR	1405-001082	SA
VR507	VARISTOR	1405-001082	SA
VR508	VARISTOR	1405-001082	SA
ZD300	DIODE-ZENER	0403-001547	SA
ZD301	DIODE-TVS	0406-001104	SA
ZD302	DIODE-TVS	0406-001254	SA
ZD303	DIODE-TVS	0406-001254	SA
ZD400	DIODE-ZENER	0403-001340	SA

7. Block Diagrams

7-1. RF Solution Block Diagram

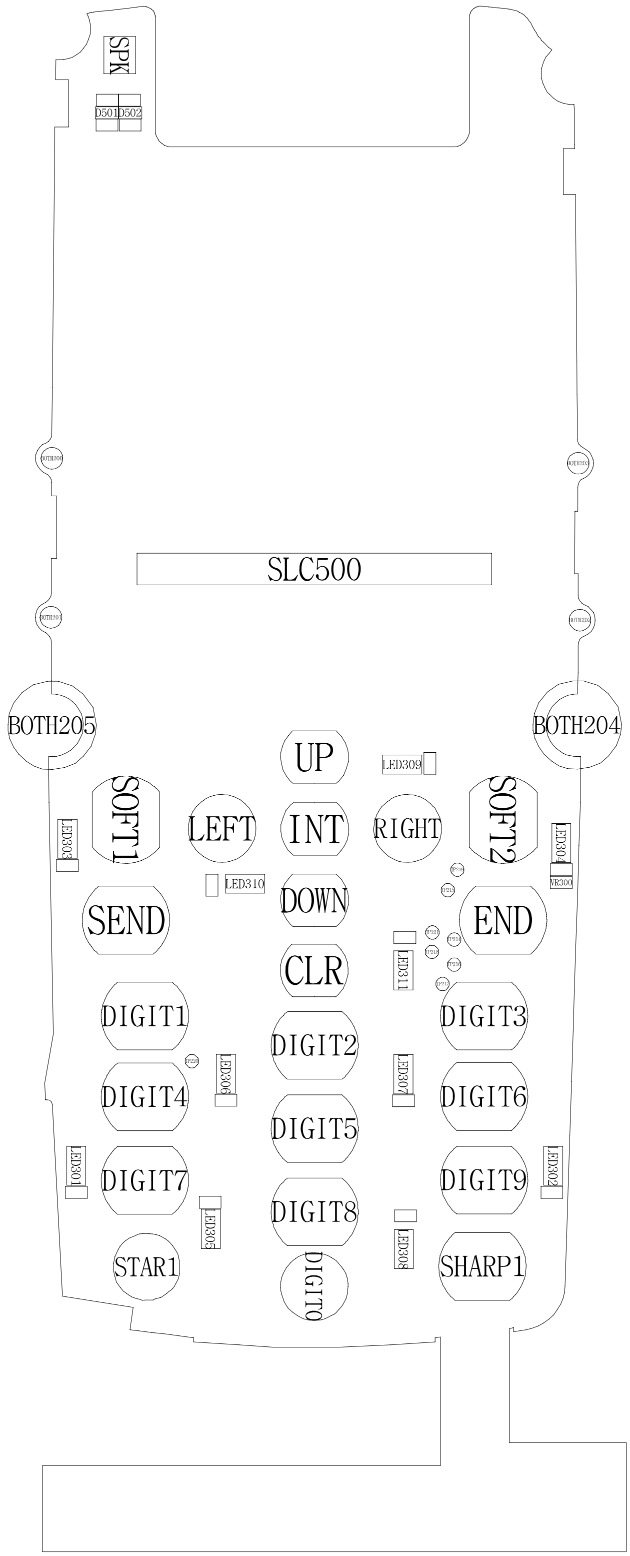


7-2. Base Band Solution Block Diagram

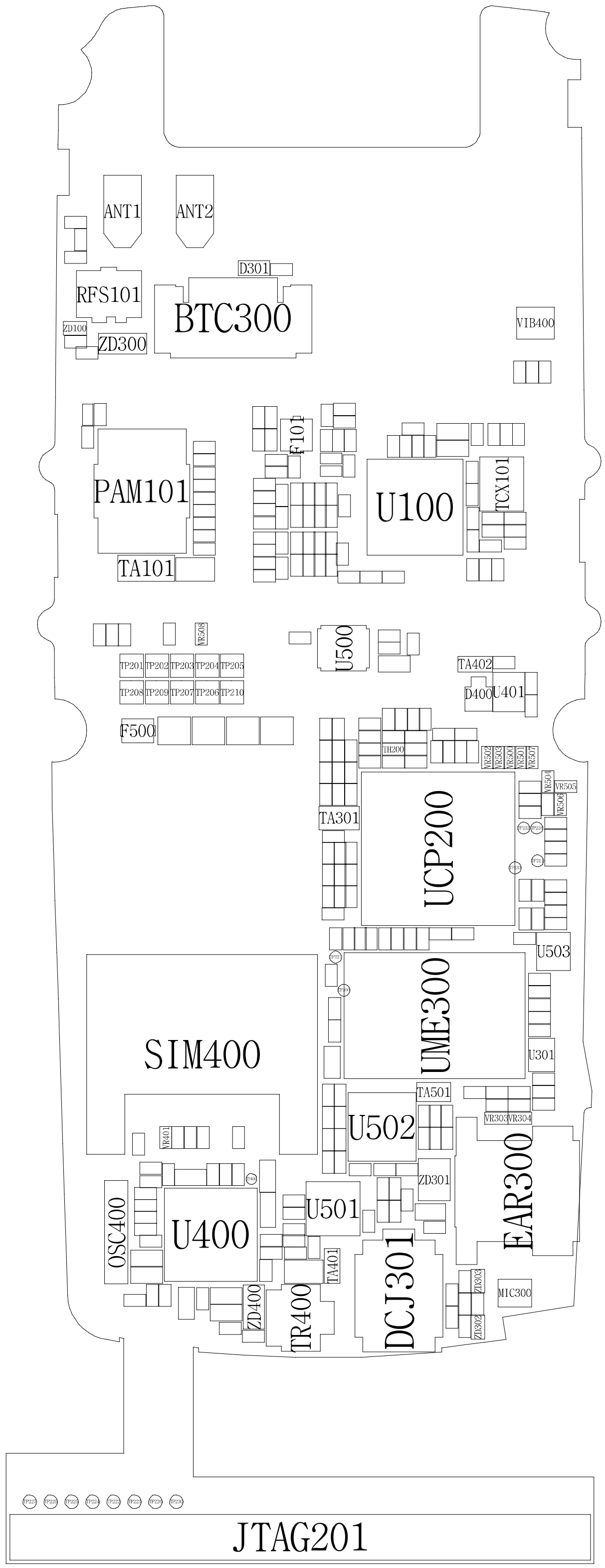


8. PCB Diagrams

Top

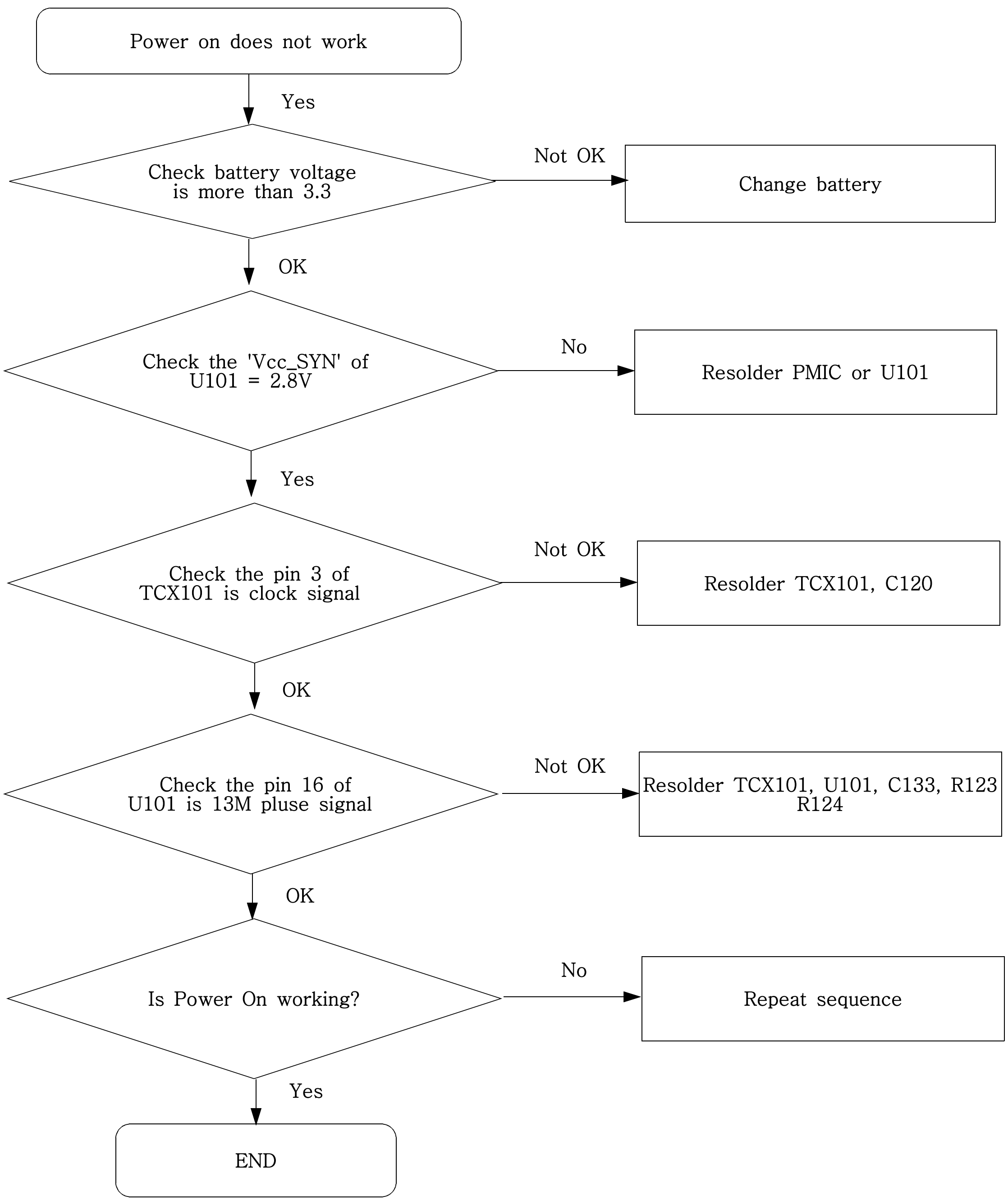


Bottom

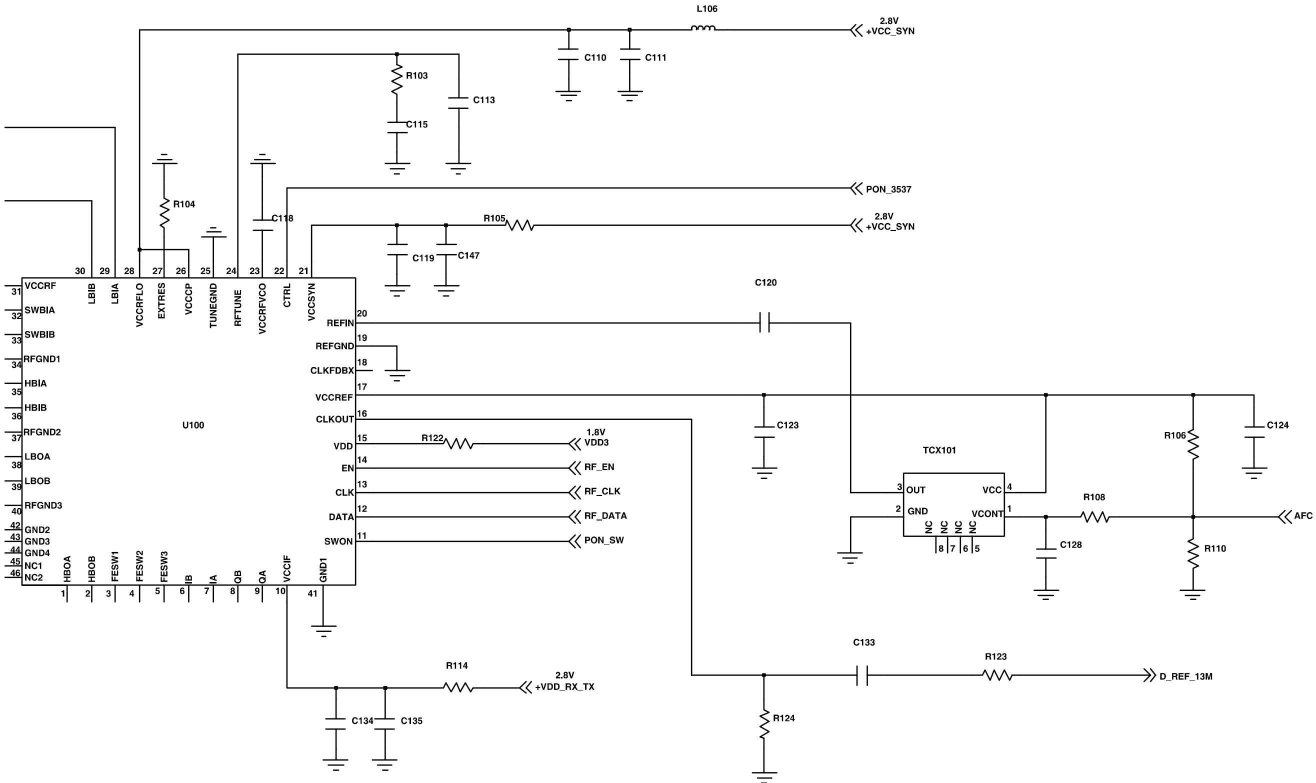

ANT1
ANT2
D301
RFS101
BTC300
ZD100
ZD300
VIB400
F101
PAM101
U100
TCX101
TA101
U500
TP201
TP202
TP203
TP204
TP205
TP208
TP209
TP207
TP206
TP210
TA402
D400
U401
F500
TA301
UCP200
U503
SIM400
UME300
U301
TA501
VR303
VR304
U502
ZD301
EAR300
U501
OSC400
U400
TA401
DCJ301
MIC300
ZD400
TR400
JTAG201

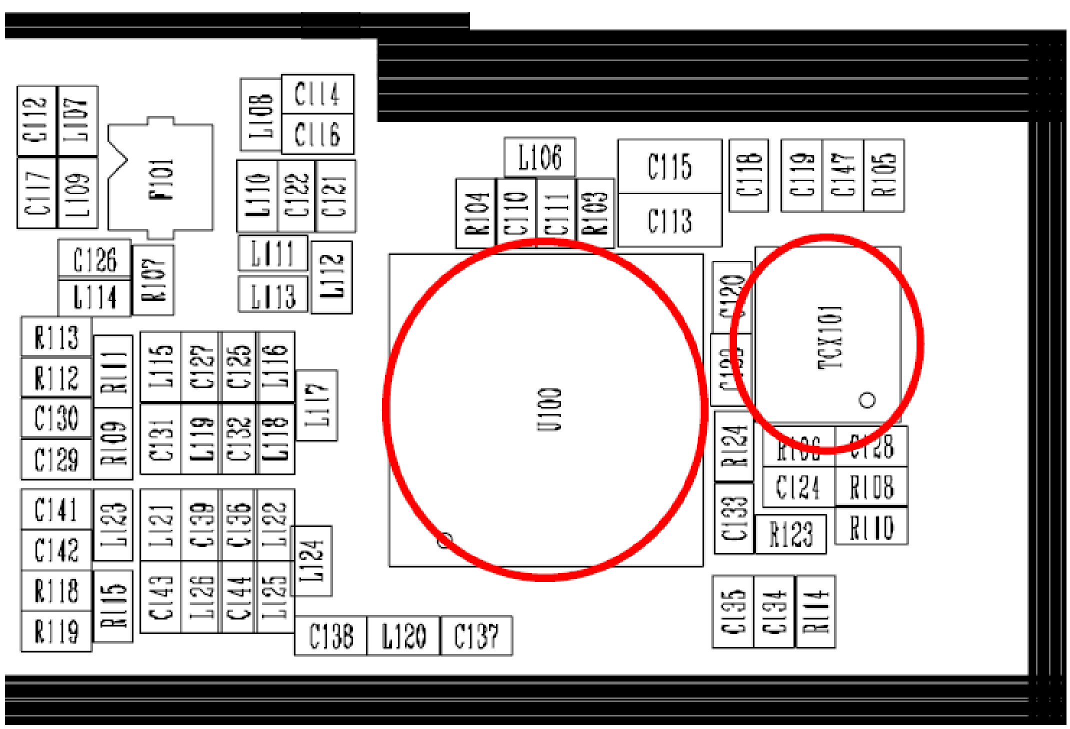
9. Flow Chart of Troubleshooting

9-1. Power On

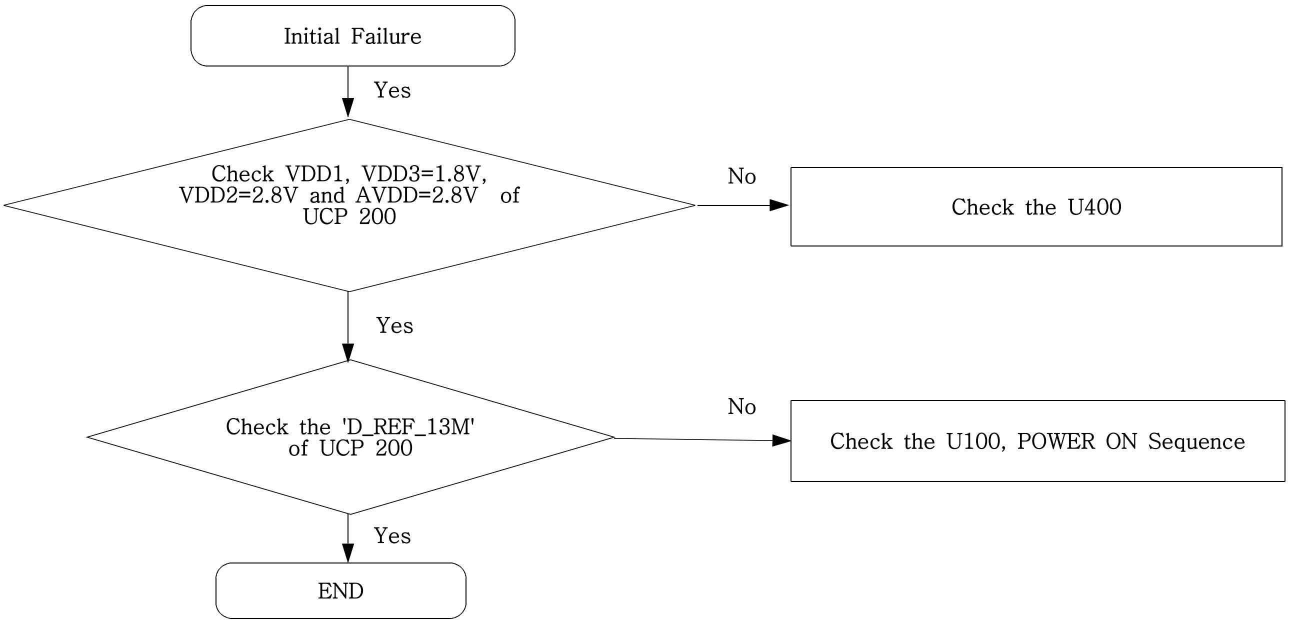


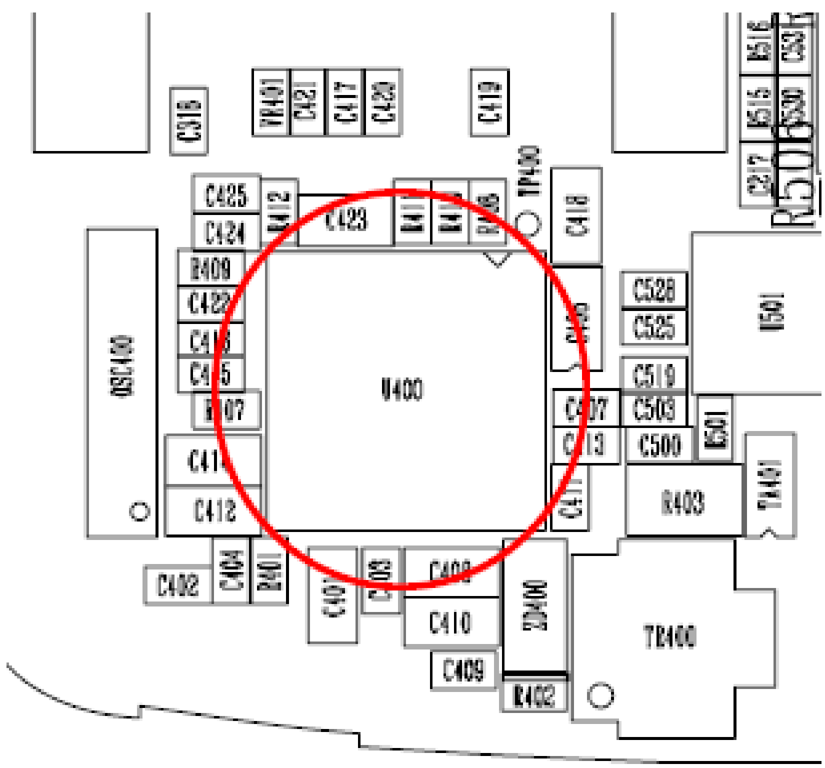
Power On

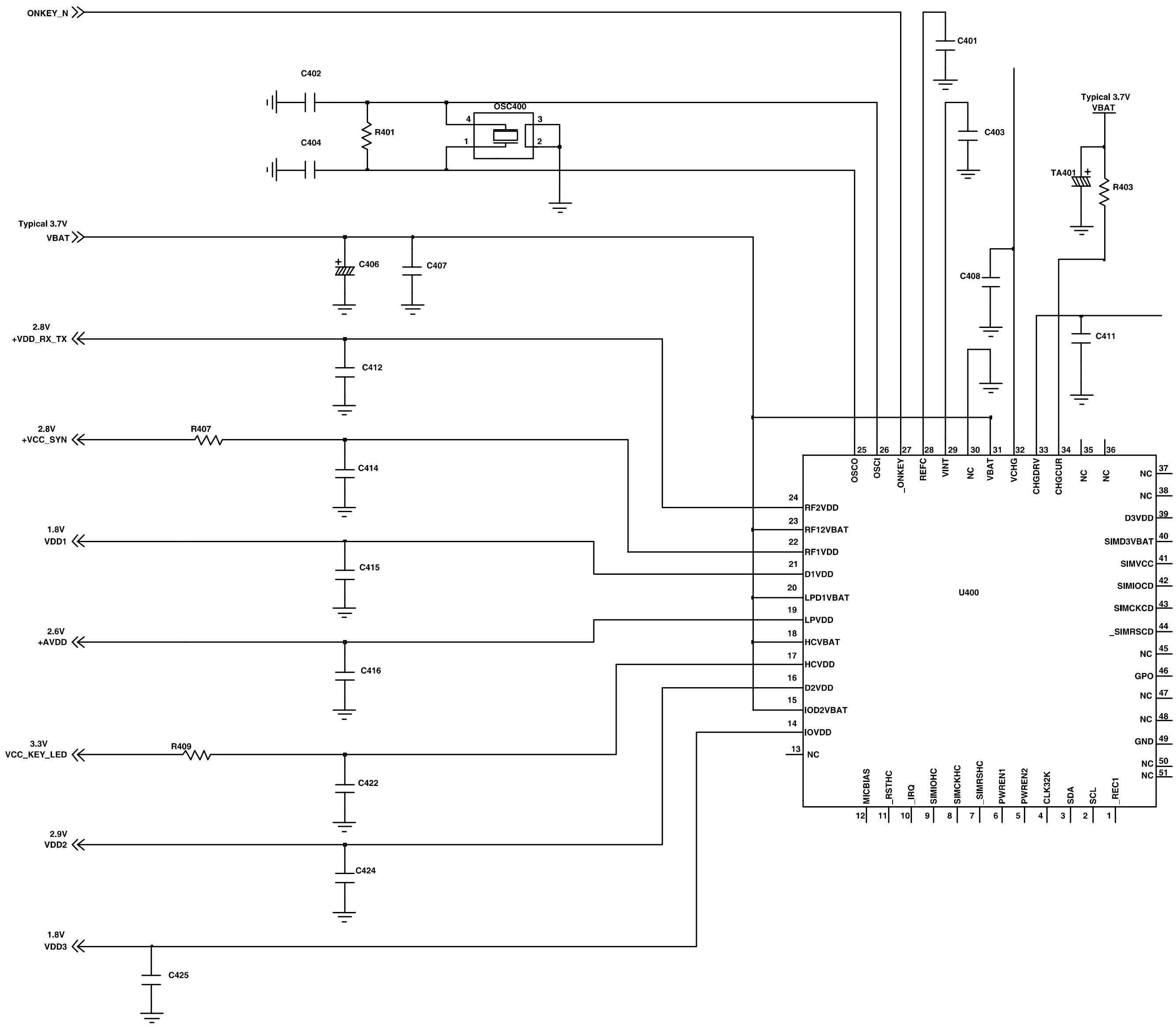

L106
2.8V +VCC_SYN
C110
C111
R103
C113
C115
R104
C118
PON_3537
R105
2.8V +VCC_SYN
C119
C147
C120
U100
VCCRF
SWBIA
SWBIB
RFGND1
HBIA
HBIB
RFGND2
LBOA
LBOB
RFGND3
GND2
GND3
GND4
NC1
NC2
LBIB
LBIA
VCCRFLO
EXTRES
VCCP
TUNEGND
RFTUNE
VCCRFVCO
CTRL
VCCSYN
REFIN
REFGND
CLKFDBX
VCCREF
CLKOUT
VDD
EN
CLK
DATA
SWON
HBOA
HBOB
FESW1
FESW2
FESW3
IB
IA
QB
QA
VCCIF
GND1
R122
1.8V VDD3
RF_EN
RF_CLK
RF_DATA
PON_SW
C123
TCX101
OUT
VCC
GND
VCONT
NC
R106
C124
R108
AFC
C128
R110
C133
R123
D_REF_13M
R124
R114
2.8V +VDD_RX_TX
C134
C135


C112
L107
C117
L109
F101
L108
C114
C116
L110
C122
C121
L111
L112
L113
C126
L114
R107
R113
R112
R111
C130
R109
C129
L115
C127
C125
L116
C131
L119
C132
L118
L117
C141
L123
C142
R118
R115
R119
L121
C139
C136
L122
C143
L126
C144
L125
L124
C138
L120
C137
L106
C115
C113
C118
C119
C147
R105
R104
C110
C111
R103
U100
C120
TCX101
R124
C124
R108
C133
R123
R110
C128
C135
C134
R114

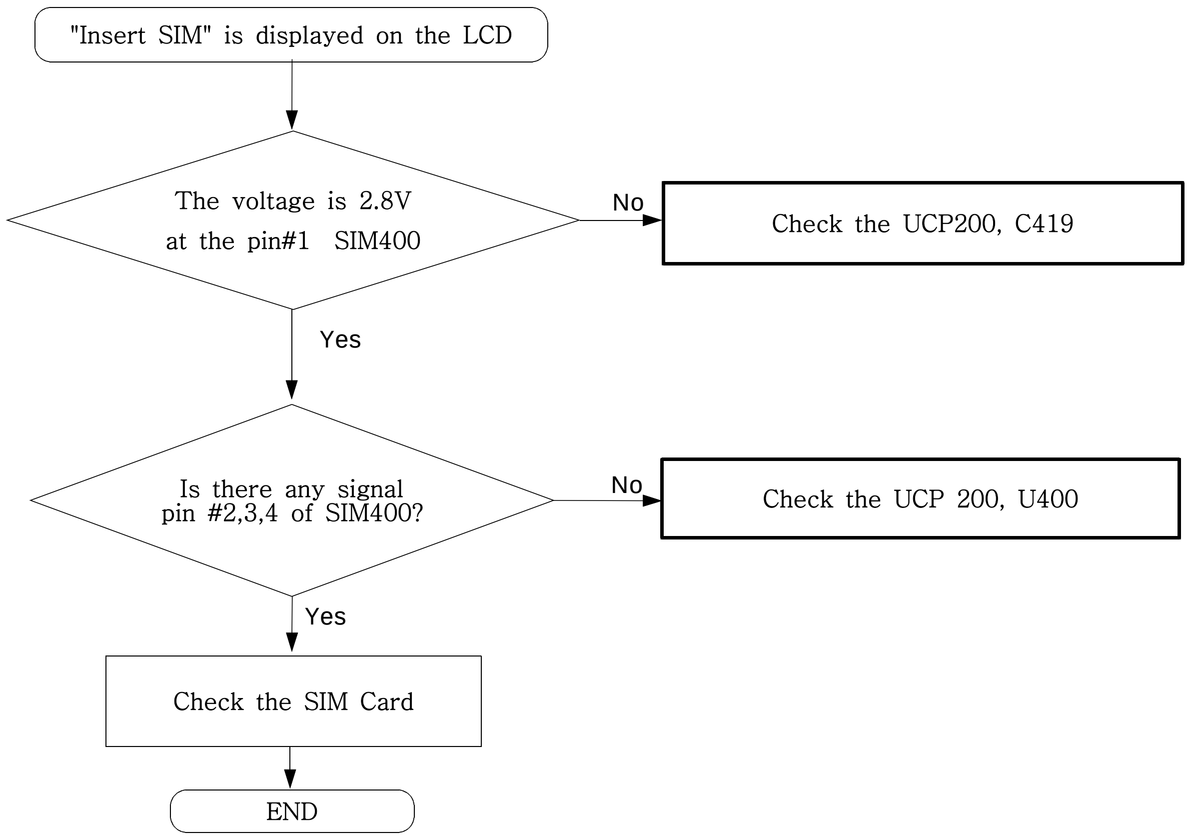
9-2. Initial

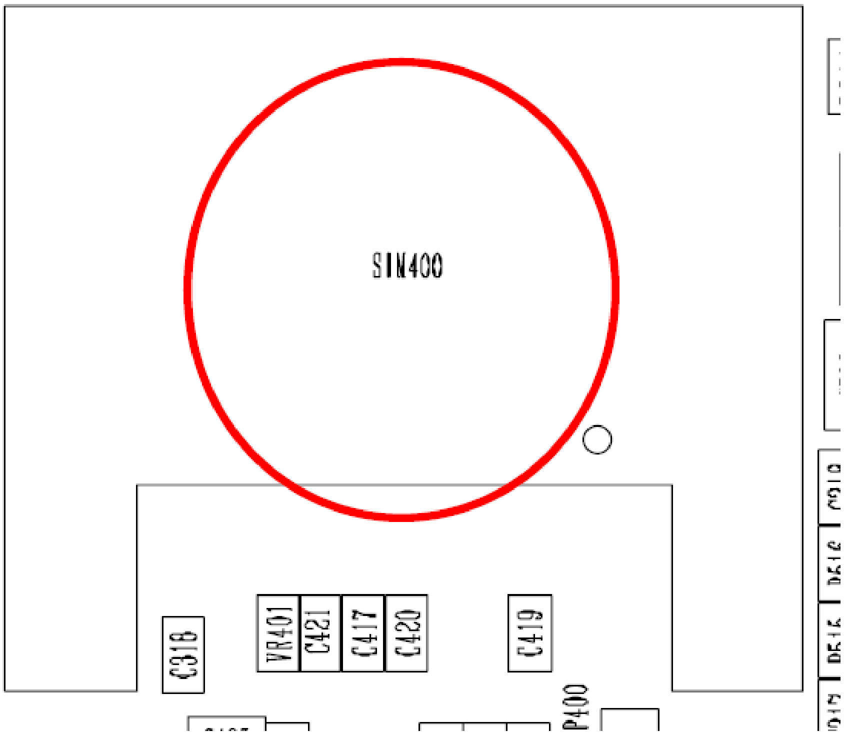

Initial Failure
Yes
Check VDD1, VDD3=1.8V, VDD2=2.8V and AVDD=2.8V of UCP 200
No
Check the U400
Yes
Check the 'D_REF_13M' of UCP 200
No
Check the U100, POWER ON Sequence
Yes
END

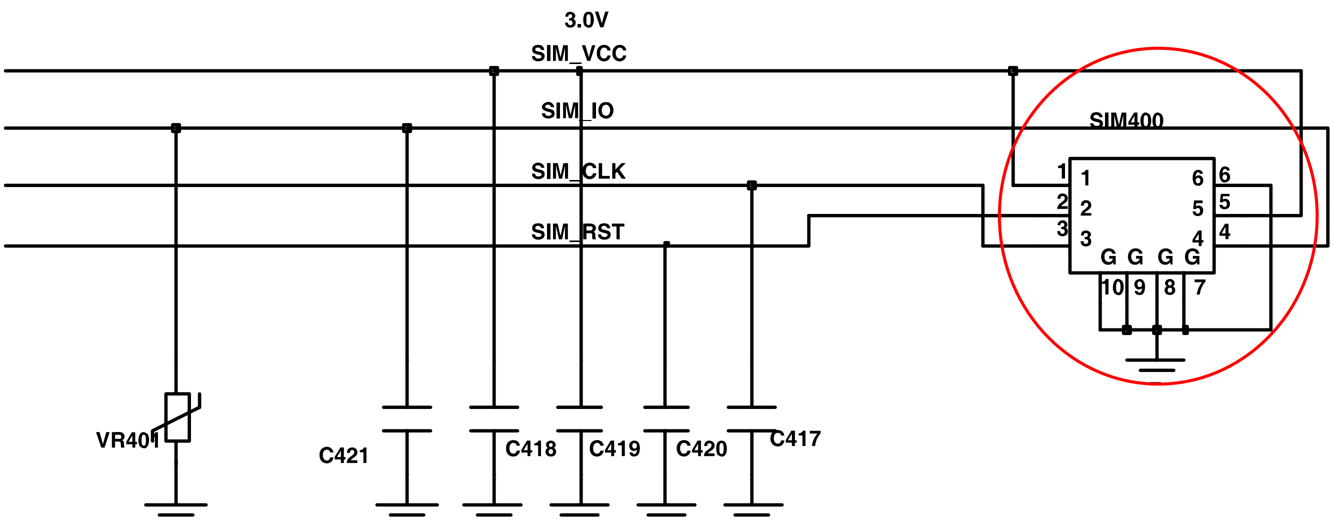

U400
OSC400
C425
C424
R409
C423
C418
C528
C525
C519
C503
C500
R403
TR400
C410
C409
R402
C402
C412
C419
C421
C417
C420


ONKEY_N
C401
C402
C403
C404
R401
OSC400
Typical 3.7V
VBAT
TA401
R403
C406
C407
C408
2.8V
+VDD_RX_TX
C411
C412
2.8V
+VCC_SYN
R407
C414
1.8V
VDD1
C415
2.6V
+AVDD
C416
3.3V
VCC_KEY_LED
R409
C422
2.9V
VDD2
C424
1.8V
VDD3
C425
U400
OSCO OSCI _ONKEY REFC VINT NC VBAT VCHG CHGDRV CHGCUR NC NC
RF2VDD RF12VBAT RF1VDD D1VDD LPD1VBAT LPVDD HCVBAT HCVDD D2VDD IOD2VBAT IOVDD NC
NC NC D3VDD SIMD3VBAT SIMVCC SIMIOCD SIMCKCD _SIMRSCD NC GPO NC NC GND NC NC
MICBIAS _RSTHC _IRQ SIMIOHC SIMCKHC _SIMRSHC PWREN1 PWREN2 CLK32K SDA SCL _REC1

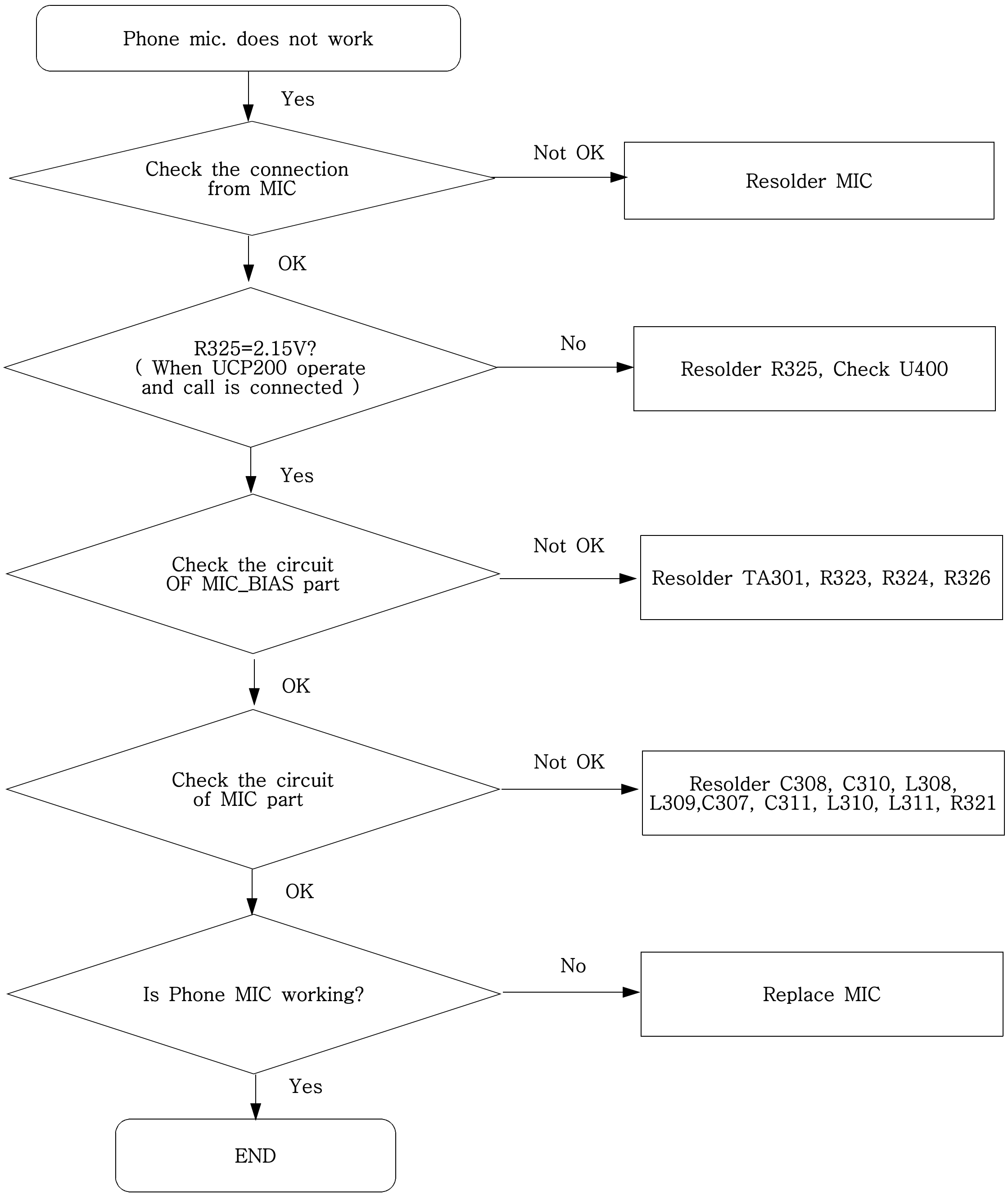
9-3. Sim Part

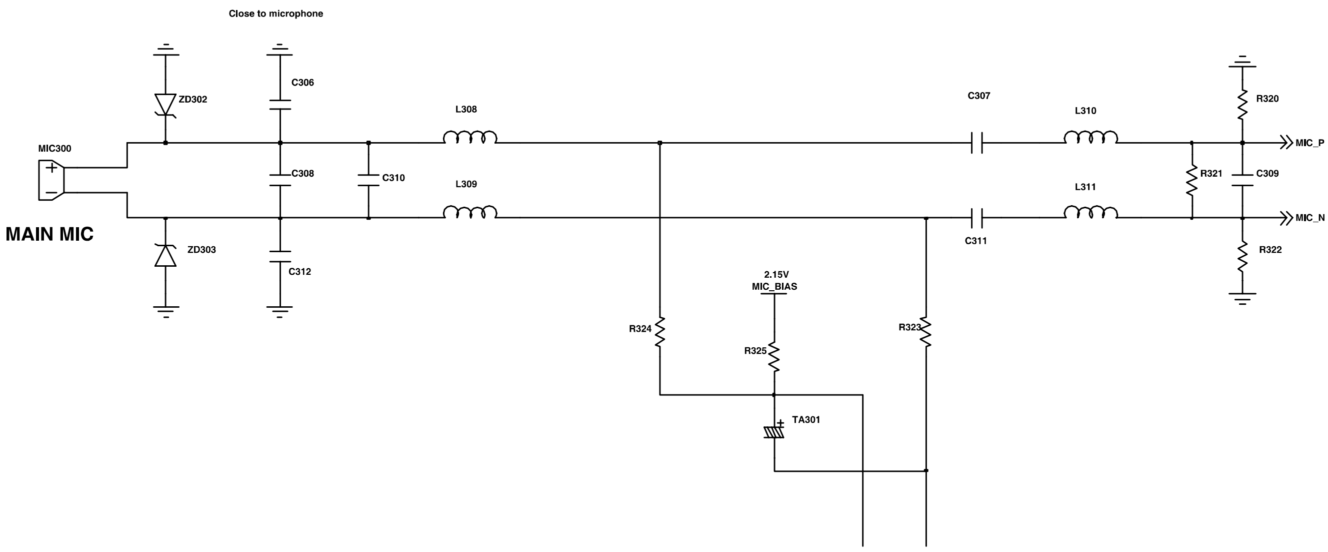

"Insert SIM" is displayed on the LCD
The voltage is 2.8V at the pin#1 SIM400
No
Check the UCP200, C419
Yes
Is there any signal pin #2,3,4 of SIM400?
No
Check the UCP 200, U400
Yes
Check the SIM Card
END


SIM400
C318
VR401
C421
C417
C420
C419
P400


3.0V
SIM_VCC
SIM_IO
SIM_CLK
SIM_RST
SIM400
VR401
C421
C418
C419
C420
C417

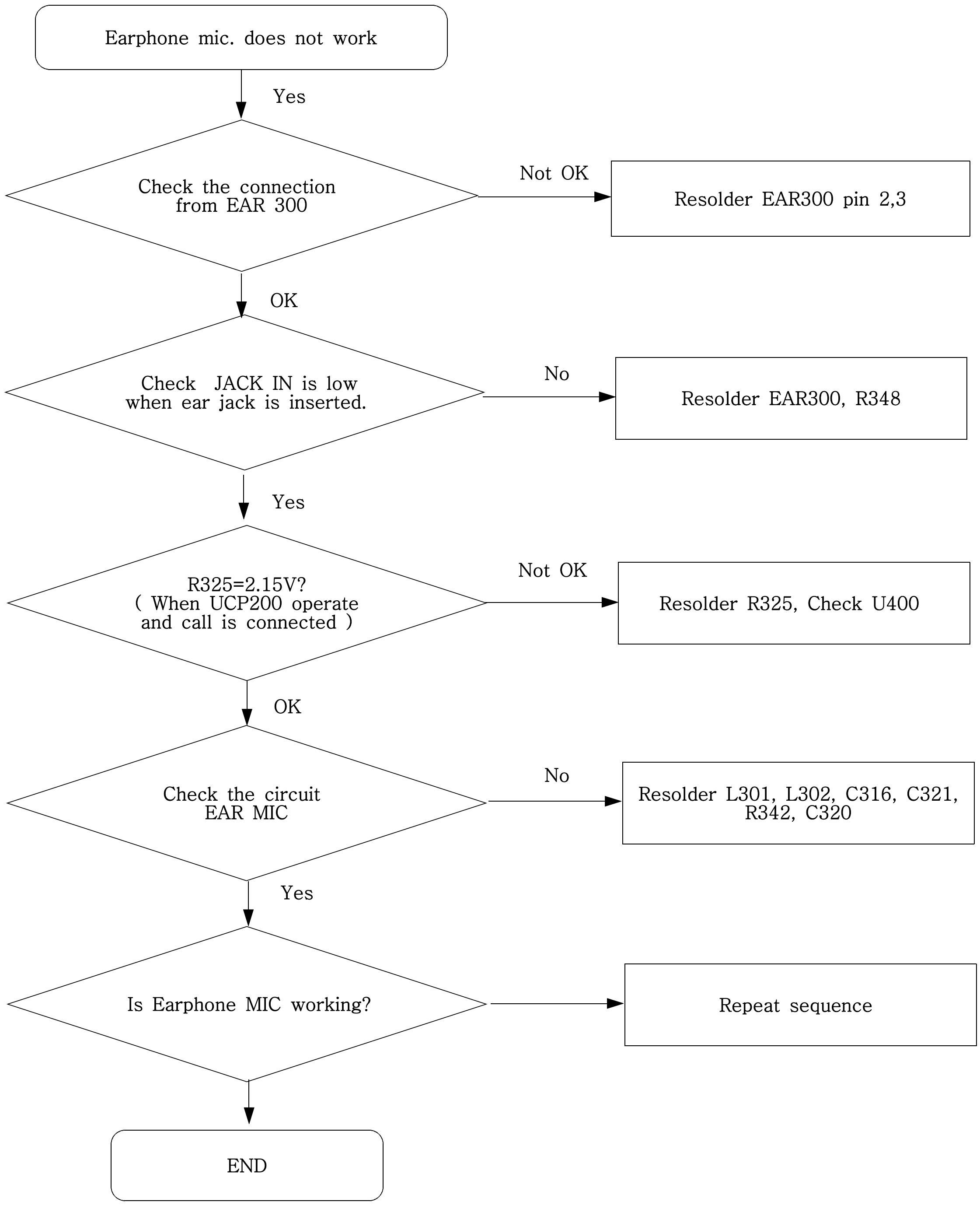
9-4. Microphone Part - Phone MIC

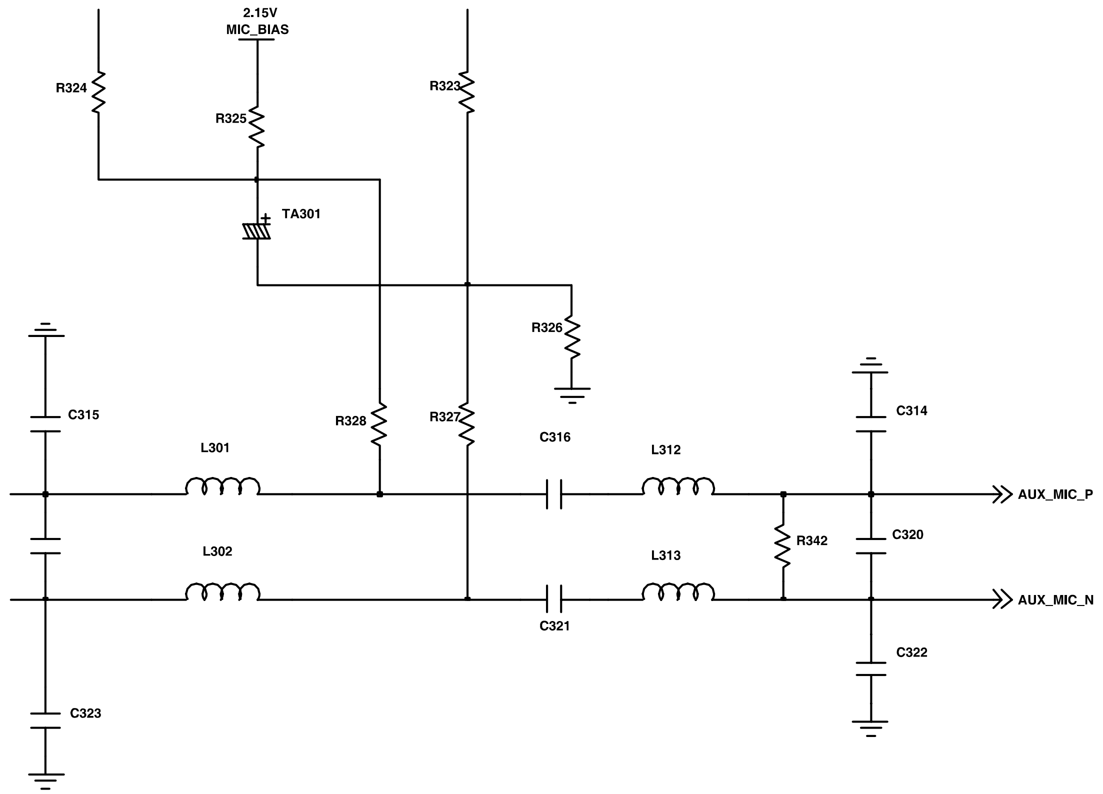


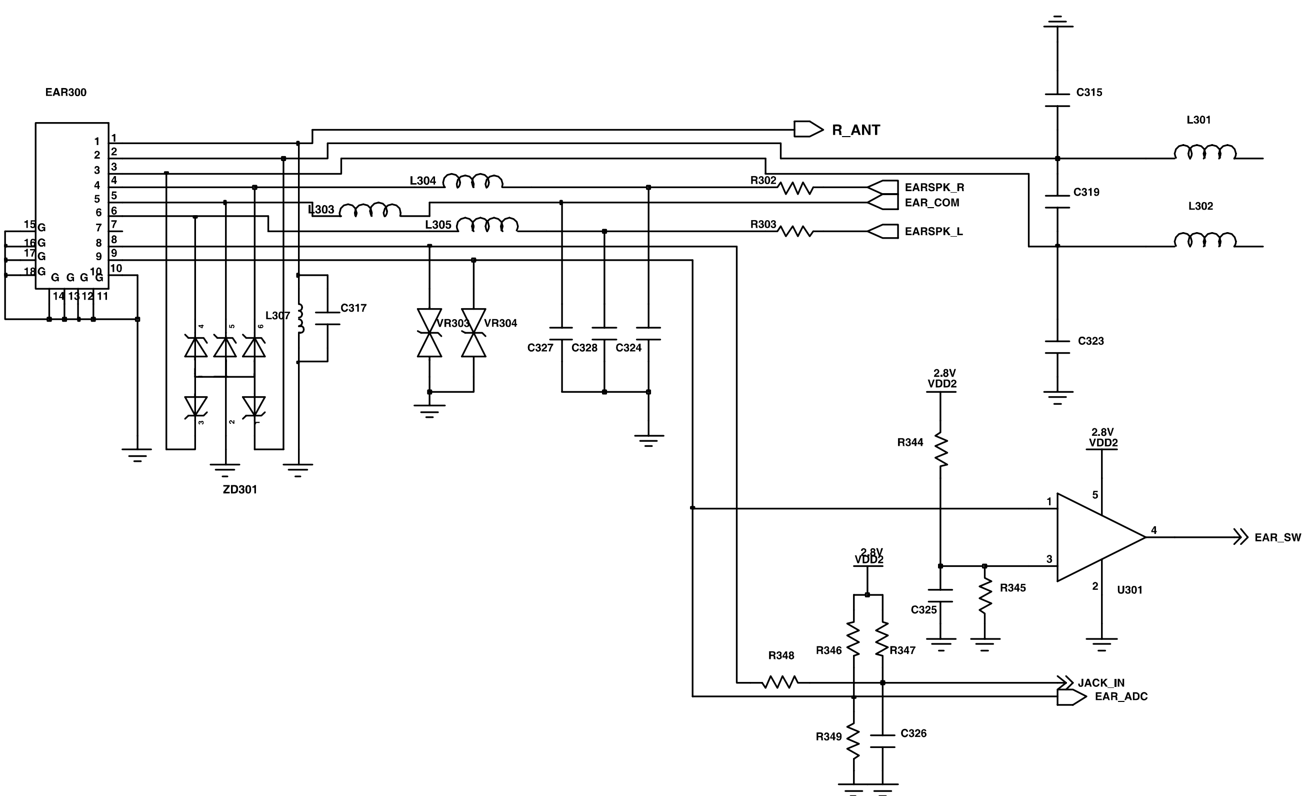

Close to microphone
MIC300
MAIN MIC
ZD302
ZD303
C306
C308
C312
C310
L308
L309
C307
C311
L310
L311
R320
R321
C309
R322
MIC_P
MIC_N
2.15V
MIC_BIAS
R324
R325
R323
TA301

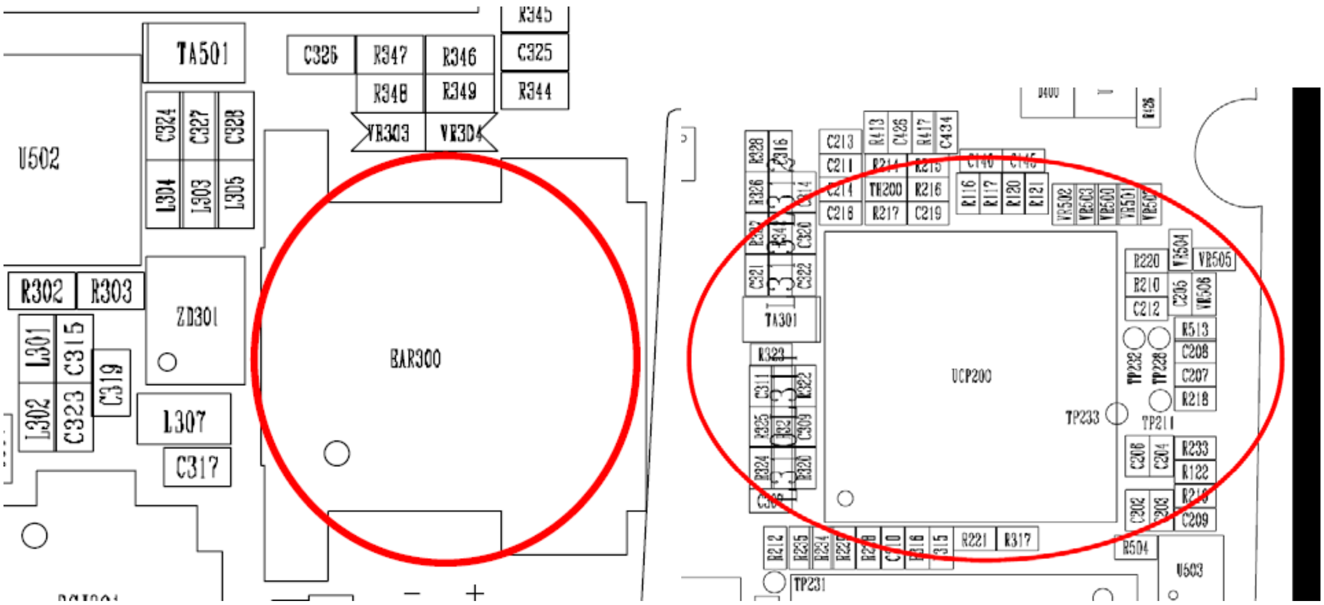

UCP200
TA301
TP233
TP231
MIC300
C317
L309
L308
C312
C308
C306
ZD303
C310
ZD302

9-5. Microphone Part - Earphone MIC

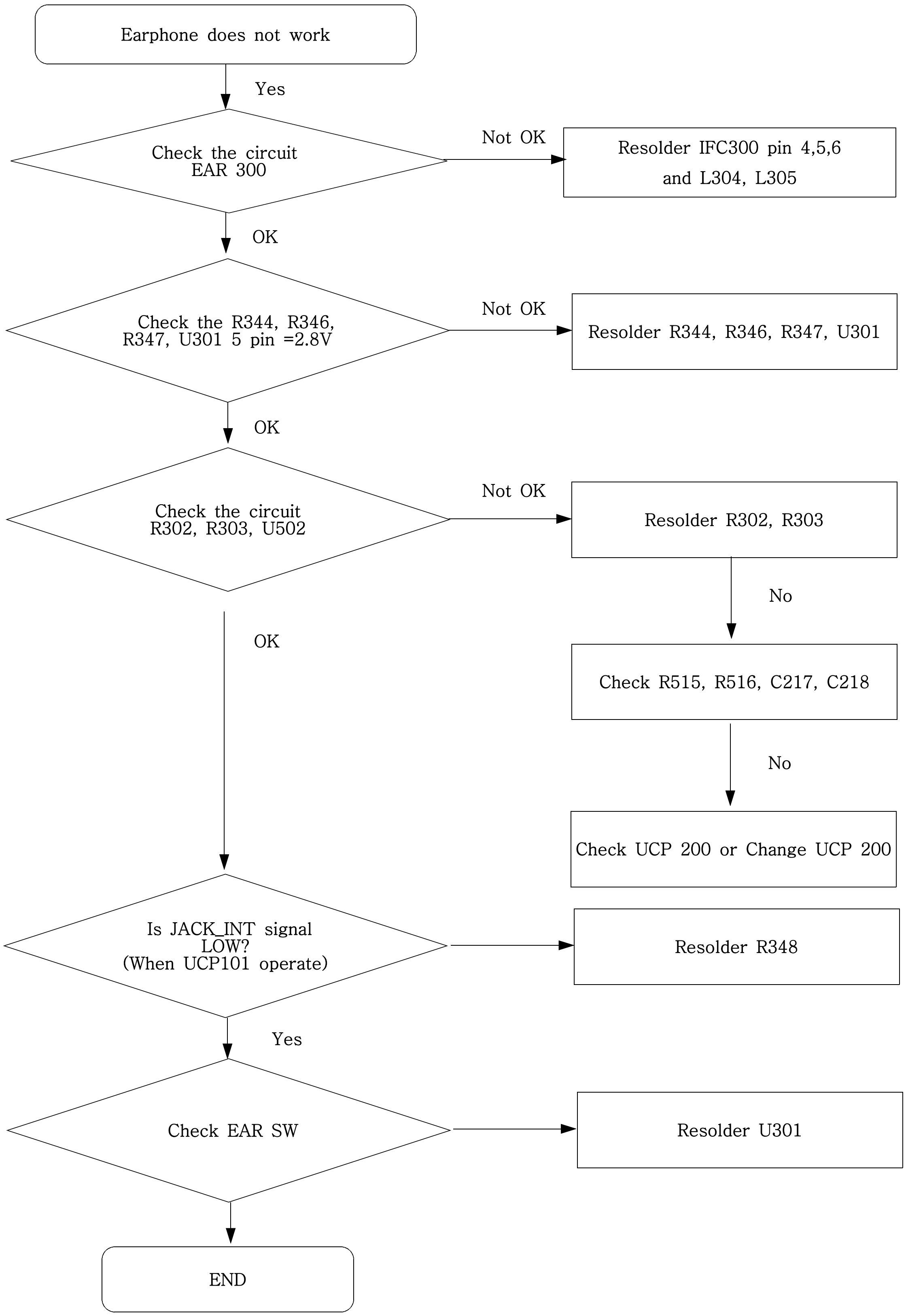


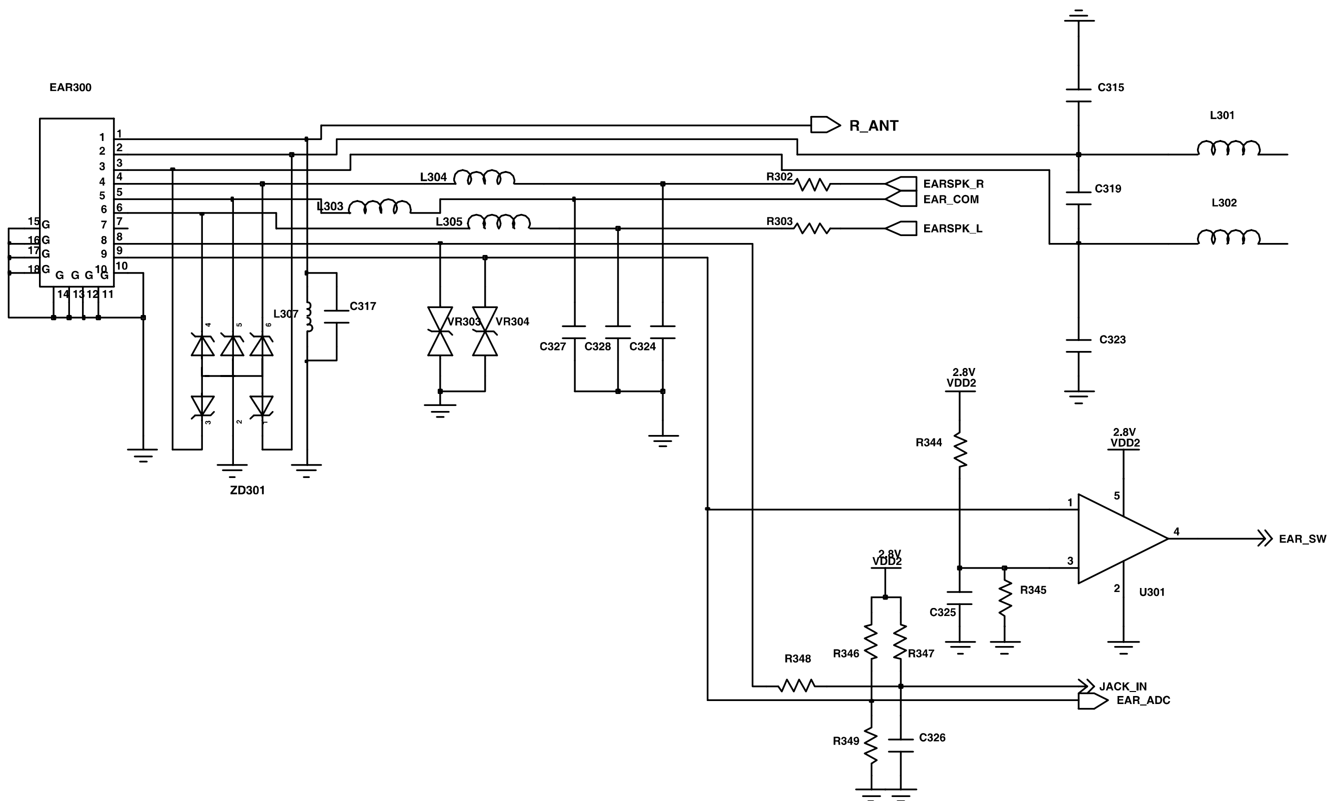

2.15V
MIC_BIAS
R324
R325
R323
TA301
R326
C315
R328
R327
C316
L312
C314
L301
AUX_MIC_P
L302
R342
C320
L313
AUX_MIC_N
C321
C322
C323

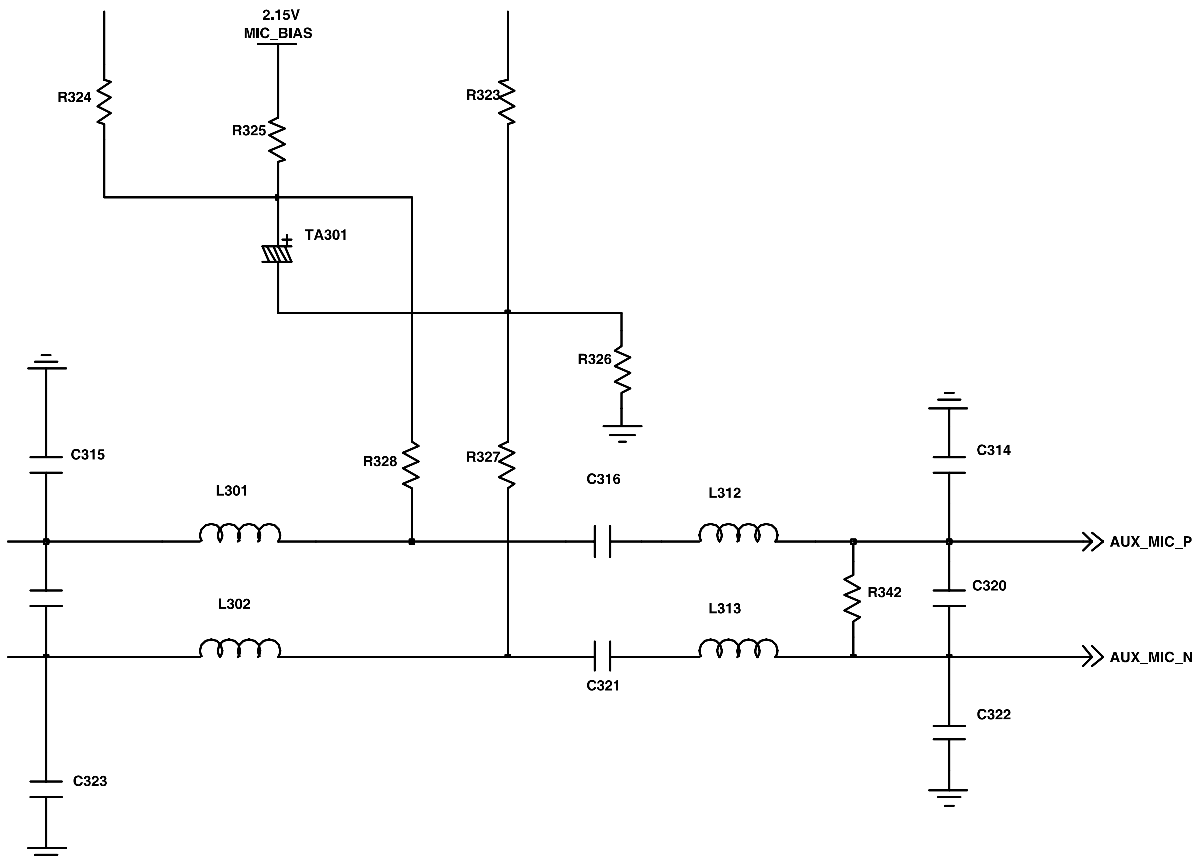

EAR300
C315
L301
R_ANT
L304
R302
EARSPK_R
EAR_COM
L303
L305
R303
EARSPK_L
C319
L302
L307
C317
VR303
VR304
C327
C328
C324
C323
ZD301
2.8V
VDD2
R344
EAR_SW
R345
C325
U301
R346
R347
R348
JACK_IN
EAR_ADC
R349
C326

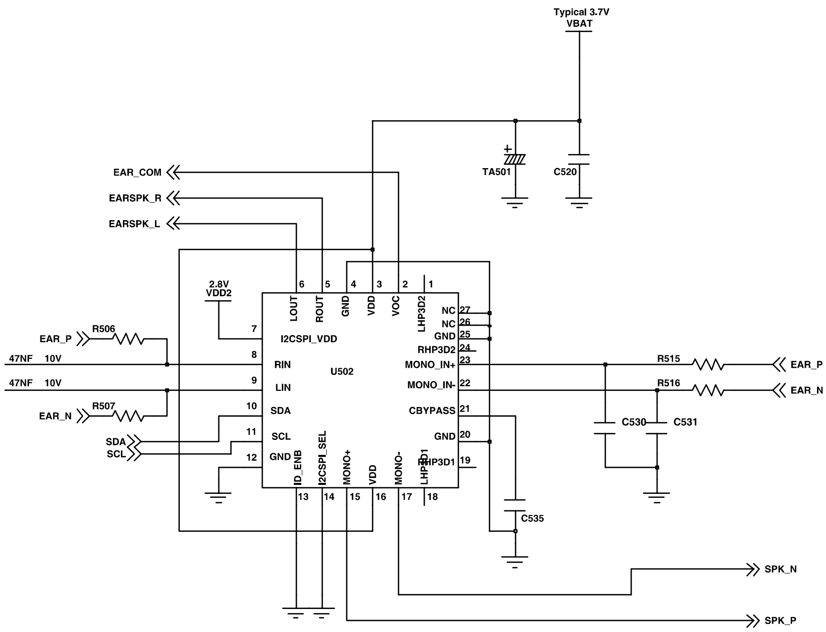

R345
TA501
C326
R347
R346
C325
R348
R349
R344
U502
C324
C327
C328
VR303
VR304
L304
L303
L305
R302
R303
ZD301
L301
C315
C319
L302
C323
L307
C317
BAR300
C213
R413
C436
R417
C434
C211
R214
R215
C214
TH200
R216
R116
R117
R120
R121
C218
R217
C219
VR502
VR503
VR500
VR501
TA301
R323
UCP200
R220
VR504
VR505
R210
C206
VR506
C212
R513
TP232
TP228
C208
C207
R218
TP233
TP211
C308
C204
R233
R122
C209
R221
R317
R504
U503
TP231
R212

9-6. Earphone Part

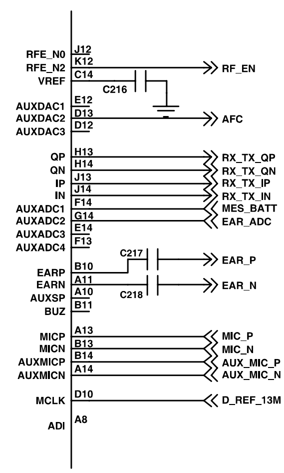


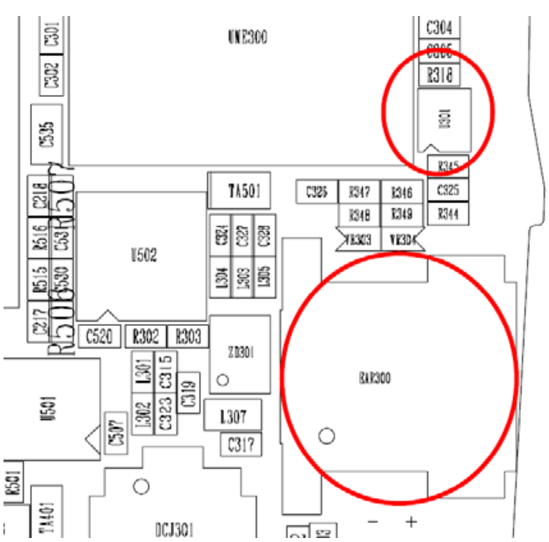

EAR300
R_ANT
C315
L301
L302
C319
C323
L304
R302
EARSPK_R
EAR_COM
L303
L305
R303
EARSPK_L
L307
C317
VR303
VR304
C327
C328
C324
ZD301
2.8V
VDD2
R344
U301
EAR_SW
R345
C325
R346
R347
R348
JACK_IN
EAR_ADC
R349
C326

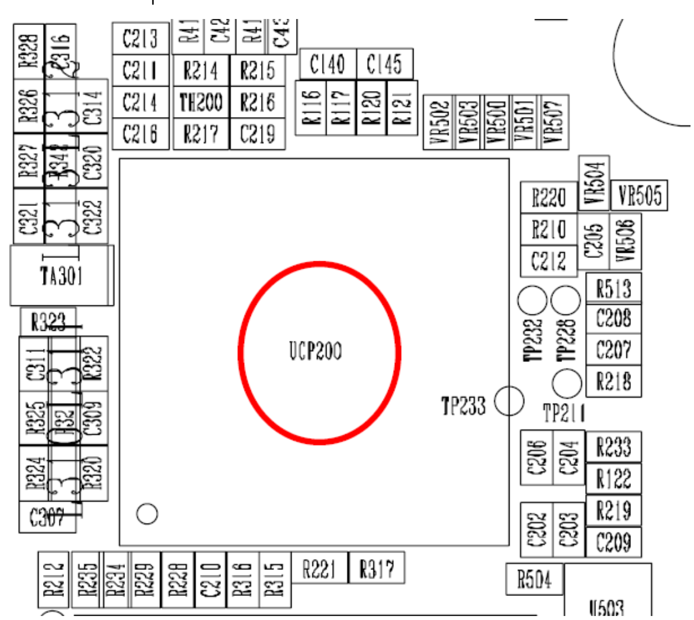

2.15V
MIC_BIAS
R324
R325
R323
TA301
R326
C315
L301
R328
R327
C316
L312
C314
AUX_MIC_P
L302
L313
R342
C320
AUX_MIC_N
C321
C322
C323


Typical 3.7V
VBAT
TA501
C520
EAR_COM
EARSPK_R
EARSPK_L
2.8V
VDD2
LOUT
ROUT
GND
VDD
VOC
LHP3D2
NC
NC
GND
RHP3D2
MONO_IN+
MONO_IN-
CBYPASS
GND
RHP3D1
I2CSPI_VDD
RIN
LIN
SDA
SCL
GND
U502
ID_ENB
I2CSPI_SEL
MONO+
VDD
MONO-
LHP3D1
EAR_P
R506
47NF 10V
47NF 10V
R507
EAR_N
SDA
SCL
R515
R516
EAR_P
EAR_N
C530
C531
C535
SPK_N
SPK_P

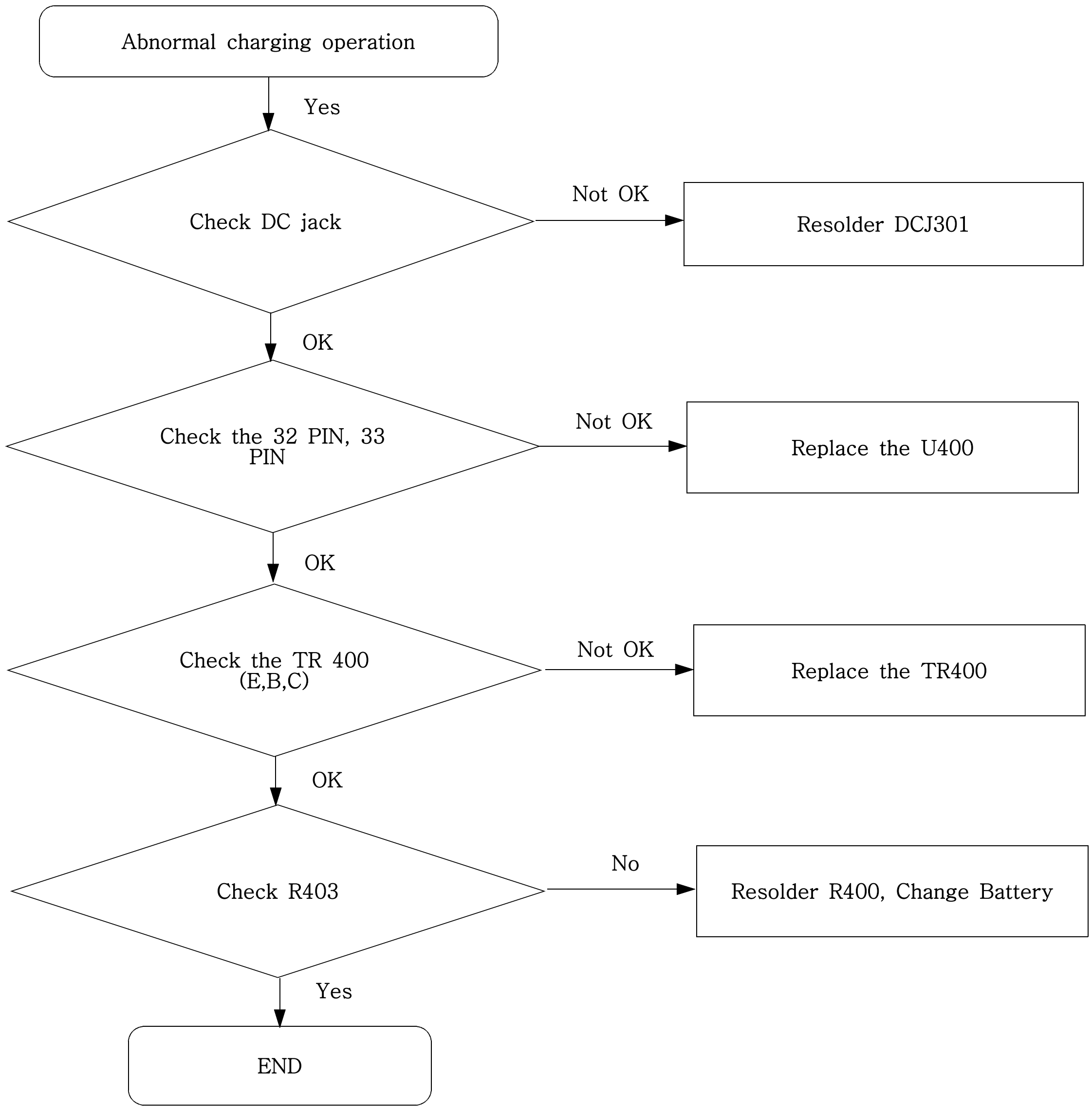
UCP200

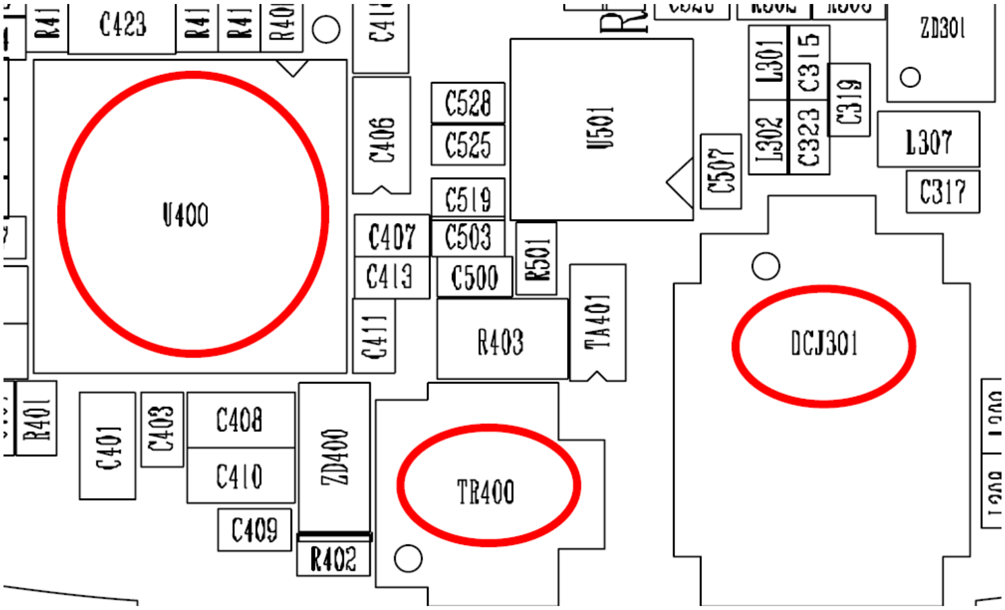

RFE_N0
RFE_N2
VREF
C216
RF_EN
AUXDAC1
AUXDAC2
AUXDAC3
AFC
QP
QN
IP
IN
AUXADC1
AUXADC2
AUXADC3
AUXADC4
RX_TX_QP
RX_TX_QN
RX_TX_IP
RX_TX_IN
MES_BATT
EAR_ADC
C217
EARP
EARN
AUXSP
BUZ
C218
EAR_P
EAR_N
MICP
MICN
AUXMICP
AUXMICN
MIC_P
MIC_N
AUX_MIC_P
AUX_MIC_N
MCLK
D_REF_13M
ADI

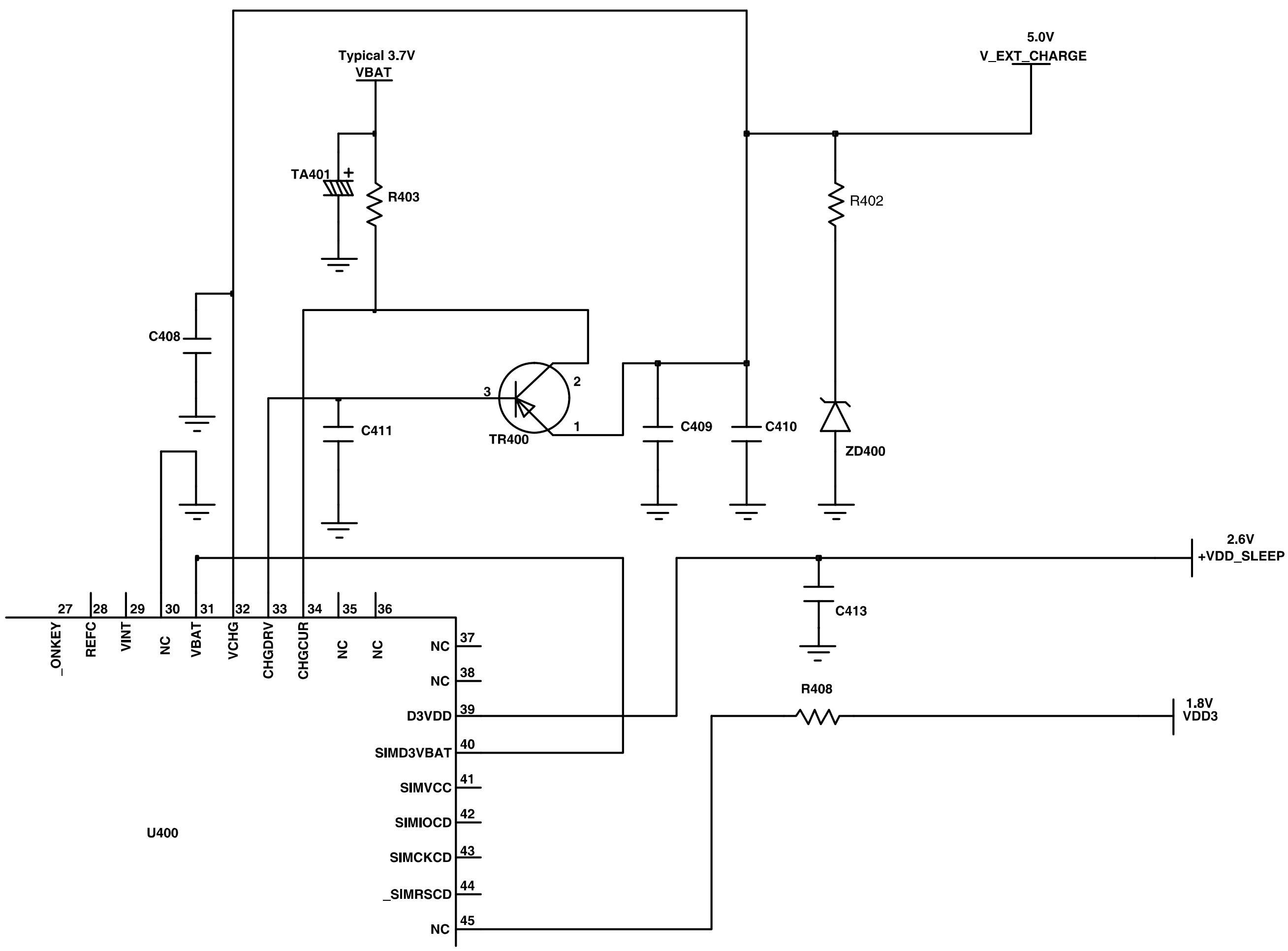

U502
TA501
EAR300
C520
R302
R303
L307
C317
DCJ301


UCP200
TA301
TP233
TP211
R504

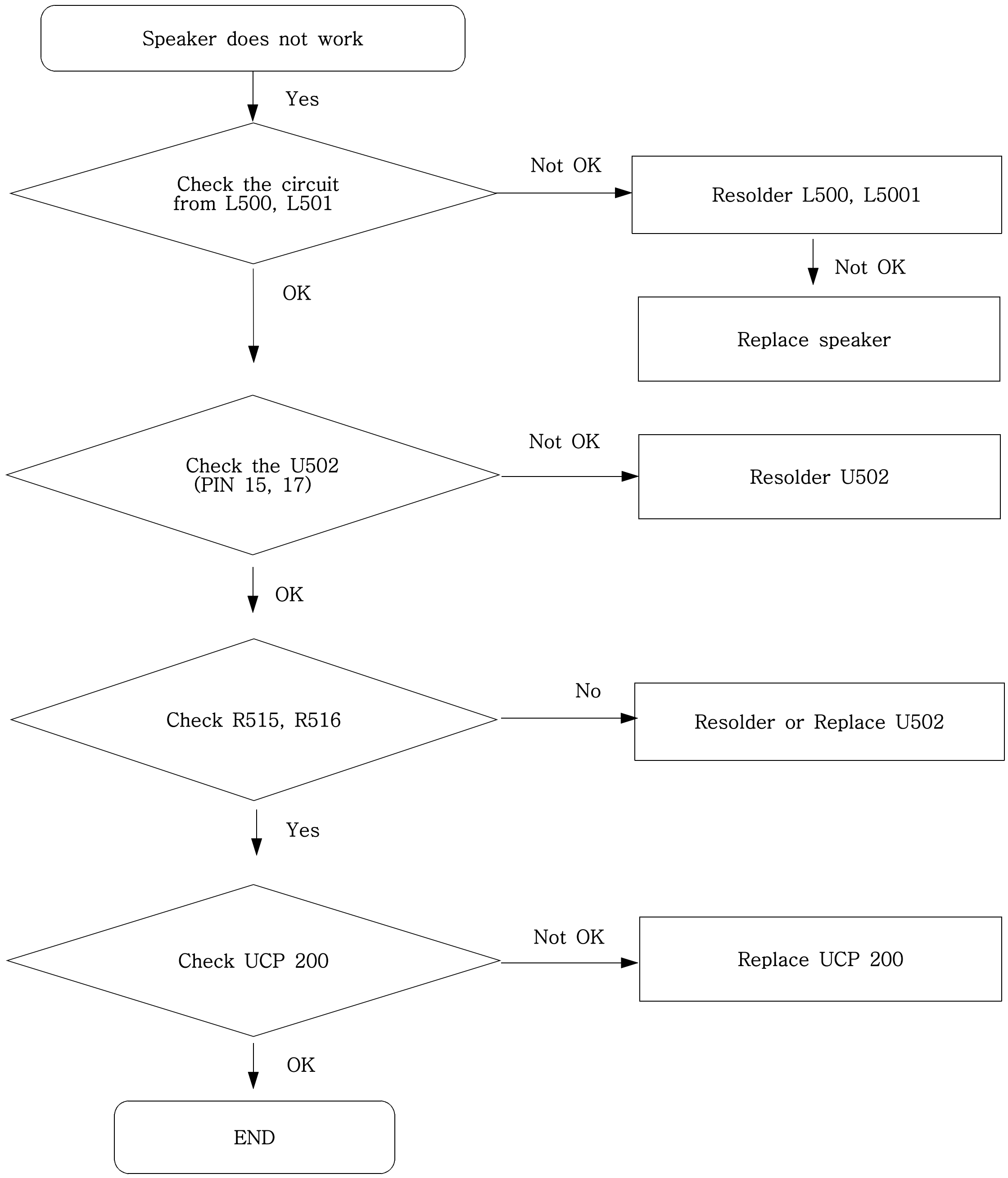
9-7. Charging Part

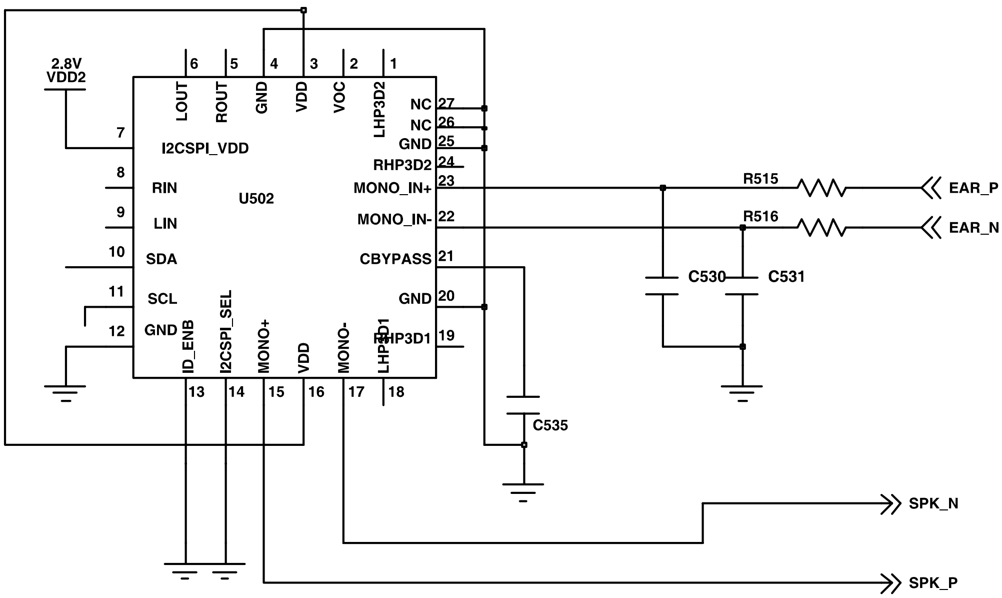


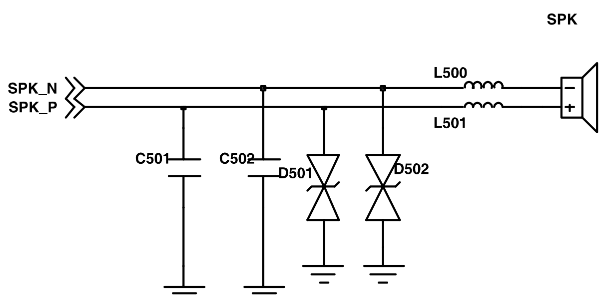

C423
U400
C406
C528
C525
U501
C519
C407
C503
C413
C500
R501
C411
R403
TA401
DCJ301
ZD301
L301
C315
C319
L302
C323
L307
C507
C317
R401
C401
C403
C408
C410
C409
ZD400
R402
TR400

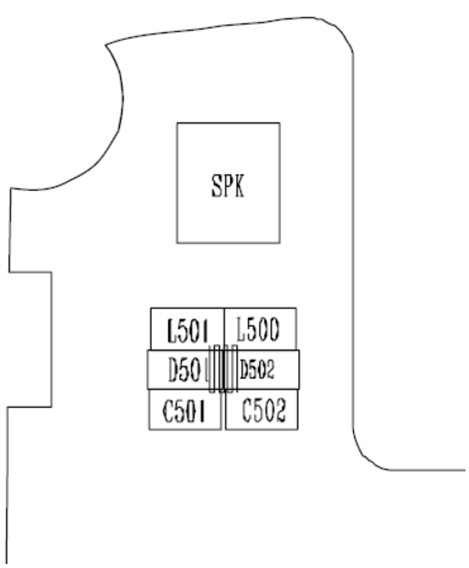

Typical 3.7V
VBAT
5.0V
V_EXT_CHARGE
TA401
R403
R402
C408
C411
TR400
C409
C410
ZD400
2.6V
+VDD_SLEEP
C413
R408
1.8V
VDD3
_ONKEY
REFC
VINT
NC
VBAT
VCHG
CHGDRV
CHGCUR
D3VDD
SIMD3VBAT
SIMVCC
SIMIOCD
SIMCKCD
_SIMRSCD
U400

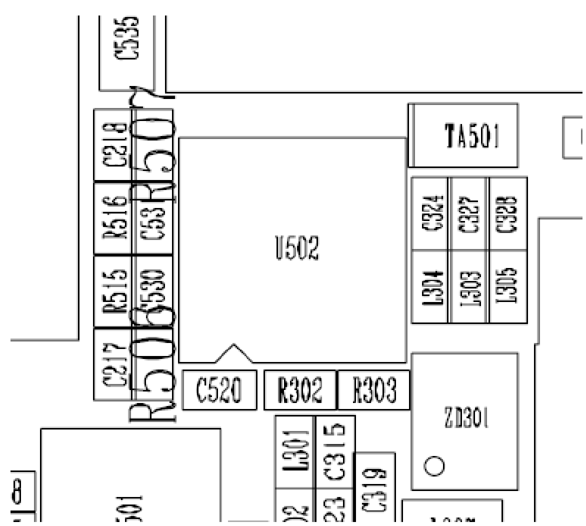
9-8. Speaker Part



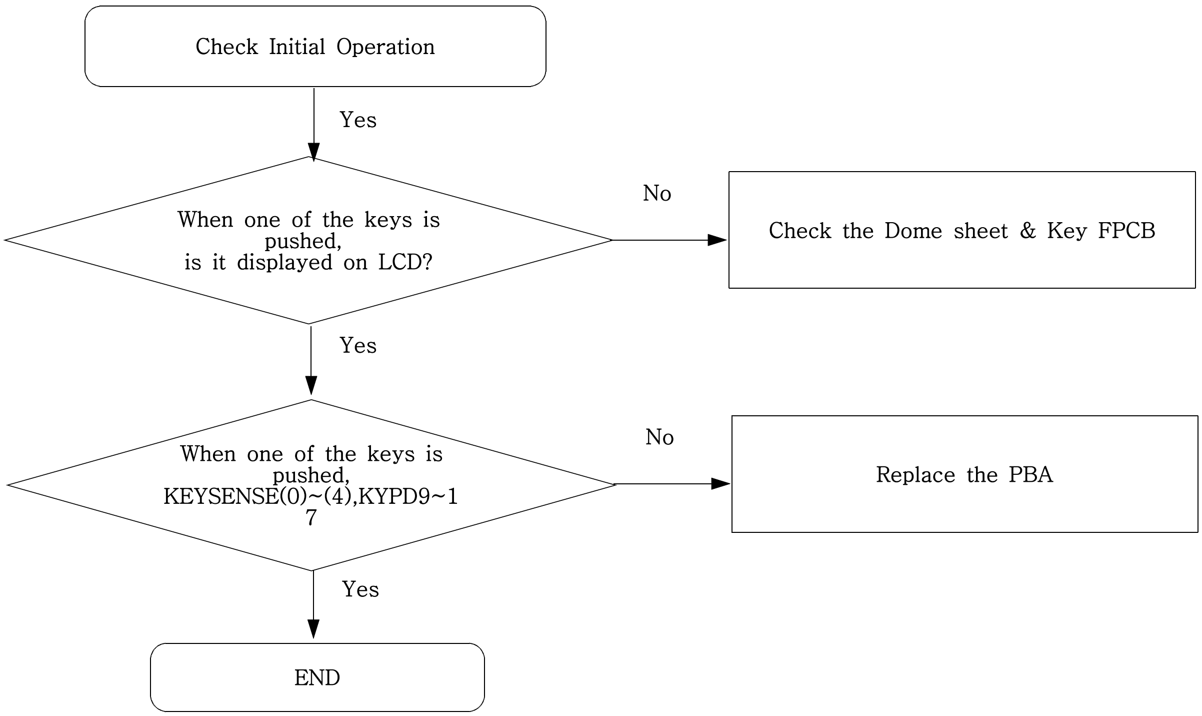

2.8V
VDD2
U502
I2CSPI_VDD
RIN
LIN
SDA
SCL
GND
LOUT
ROUT
GND
VDD
VOC
LHP3D2
NC
NC
GND
RHP3D2
MONO_IN+
MONO_IN-
CBYPASS
GND
RHP3D1
ID_ENB
I2CSPI_SEL
MONO+
VDD
MONO-
LHP3D1
R515
R516
EAR_P
EAR_N
C530
C531
C535
SPK_N
SPK_P


SPK
SPK_N
SPK_P
L500
L501
C501
C502
D501
D502

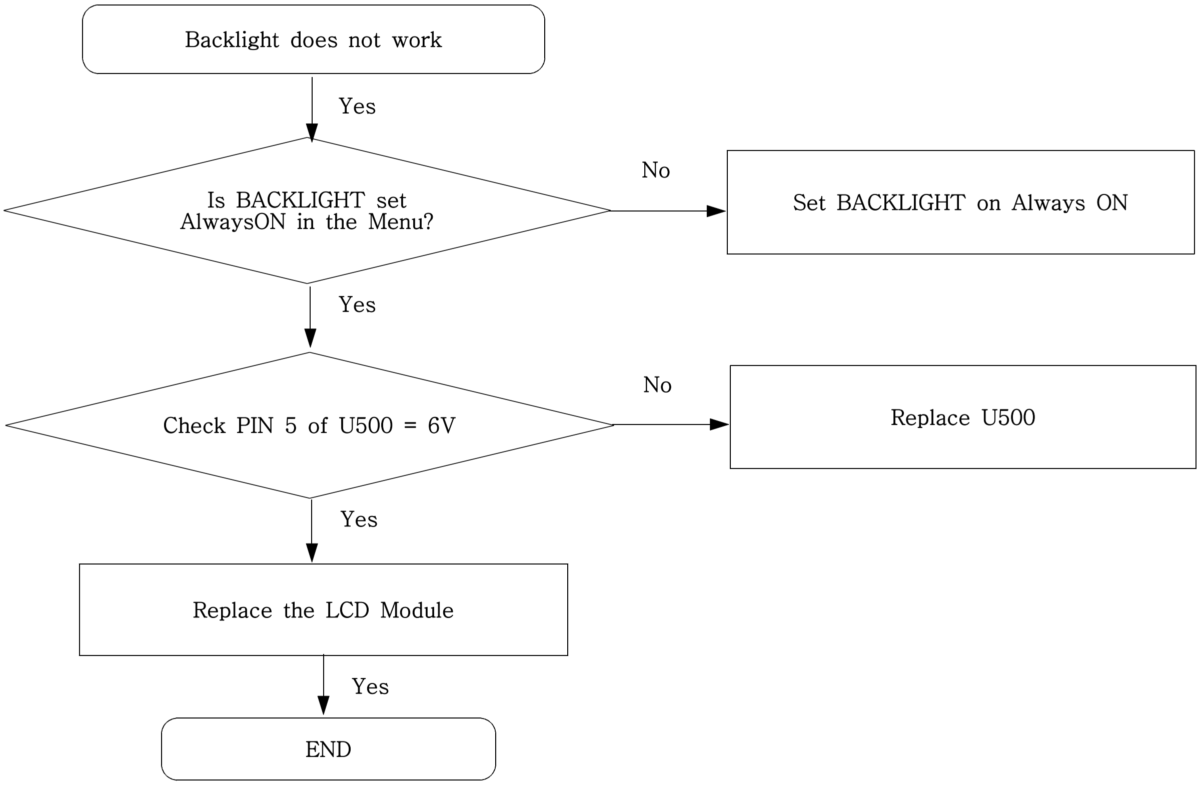

SPK
L501
L500
D502
C501
C502

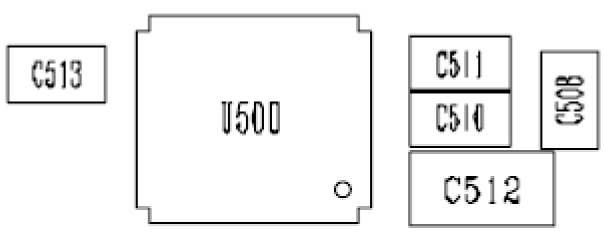

C535
C218
R516
R515
C217
U502
TA501
C324
C327
C328
L304
L303
L305
C520
R302
R303
ZD301
L301
C315
C319

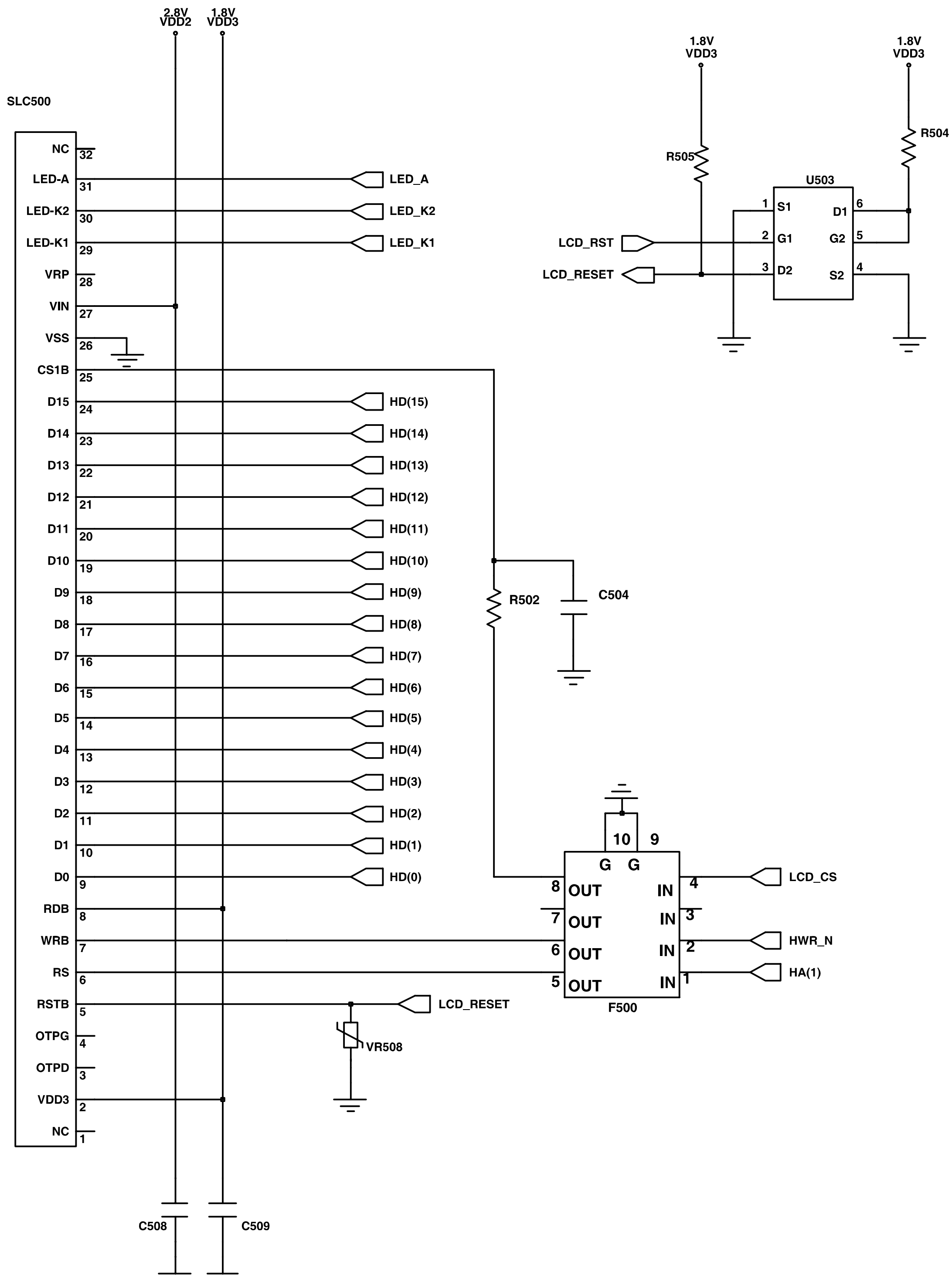
9-9. Key Data Input



9-10. Back Light (for Color Main LCD)

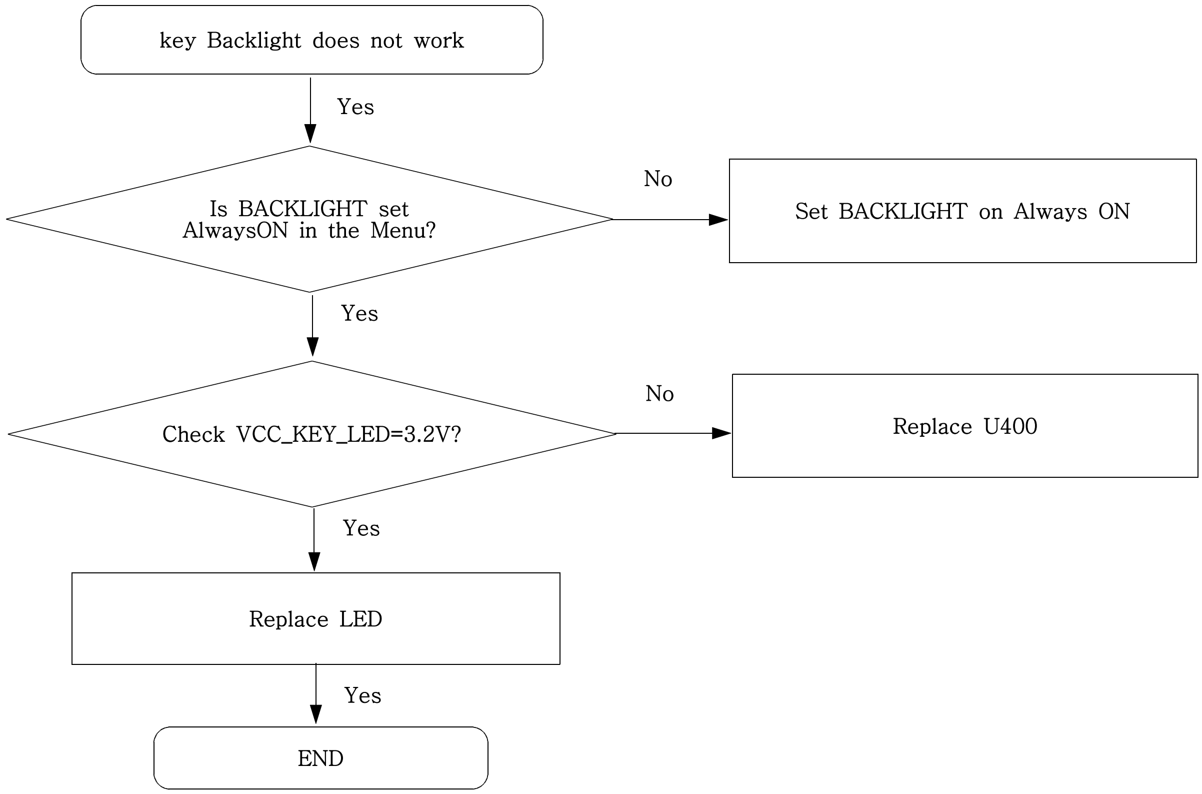


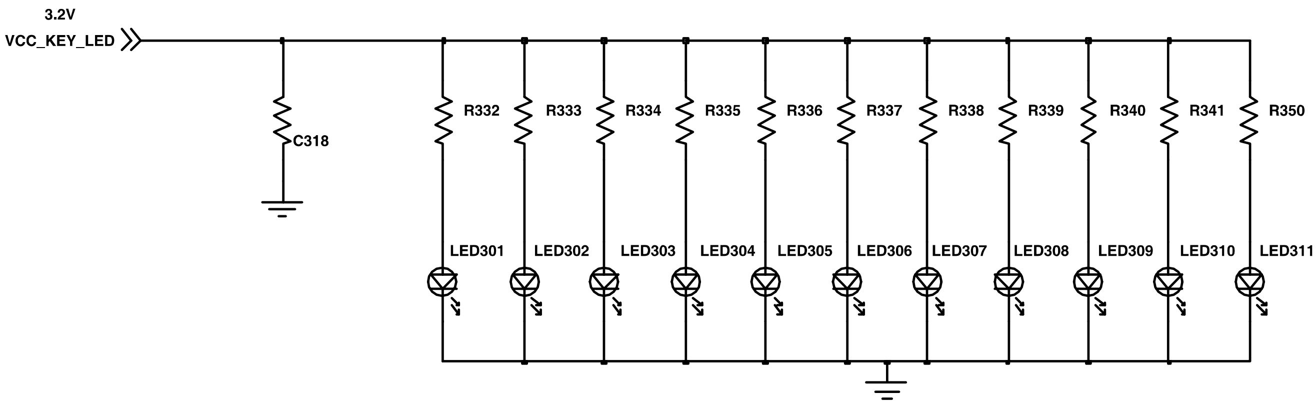




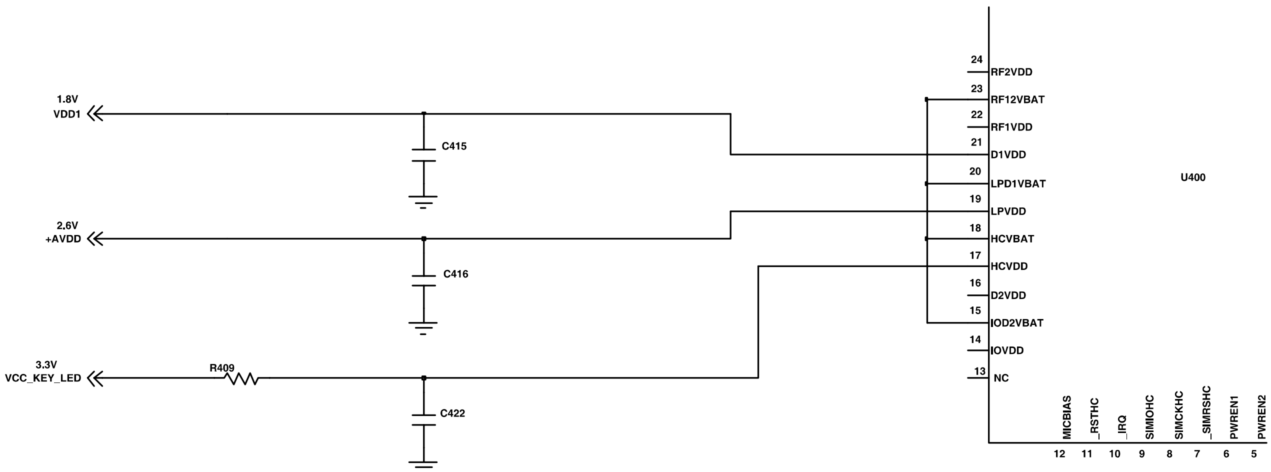
2.8V VDD2
1.8V VDD3
SLC500
NC
LED-A
LED-K2
LED-K1
VRP
VIN
VSS
CS1B
D15
D14
D13
D12
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
RDB
WRB
RS
RSTB
OTPG
OTPD
VDD3
NC
LED_A
LED_K2
LED_K1
HD(15)
HD(14)
HD(13)
HD(12)
HD(11)
HD(10)
HD(9)
HD(8)
HD(7)
HD(6)
HD(5)
HD(4)
HD(3)
HD(2)
HD(1)
HD(0)
LCD_RESET
VR508
R502
C504
C508
C509
F500
OUT
IN
G G
LCD_CS
HWR_N
HA(1)
1.8V VDD3
R505
R504
U503
S1
G1
D2
D1
G2
S2
LCD_RST
LCD_RESET

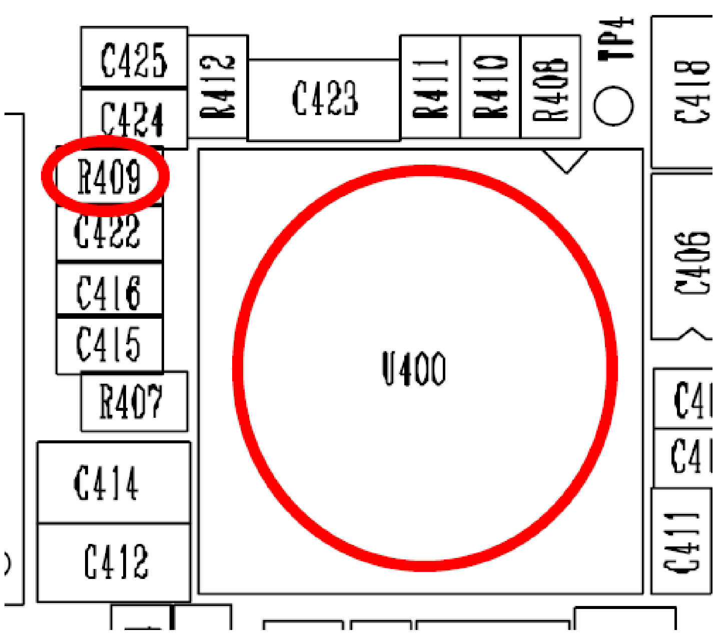
9-11. Key Back Light

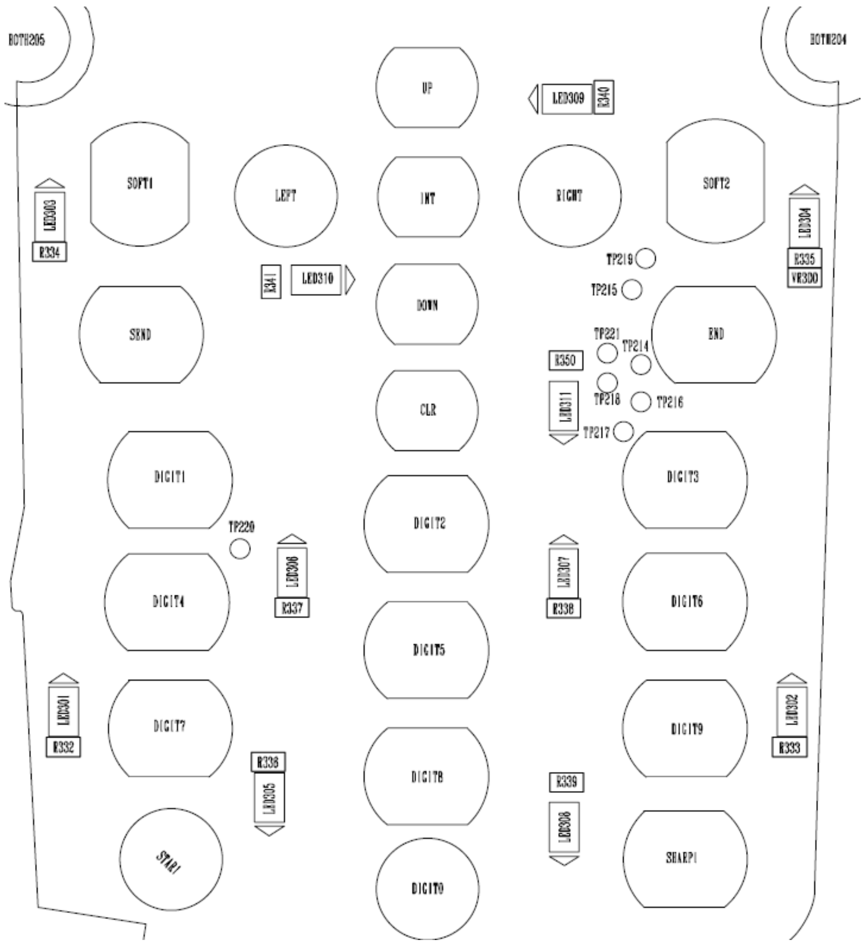



3.2V
VCC_KEY_LED
C318
R332
R333
R334
R335
R336
R337
R338
R339
R340
R341
R350
LED301
LED302
LED303
LED304
LED305
LED306
LED307
LED308
LED309
LED310
LED311

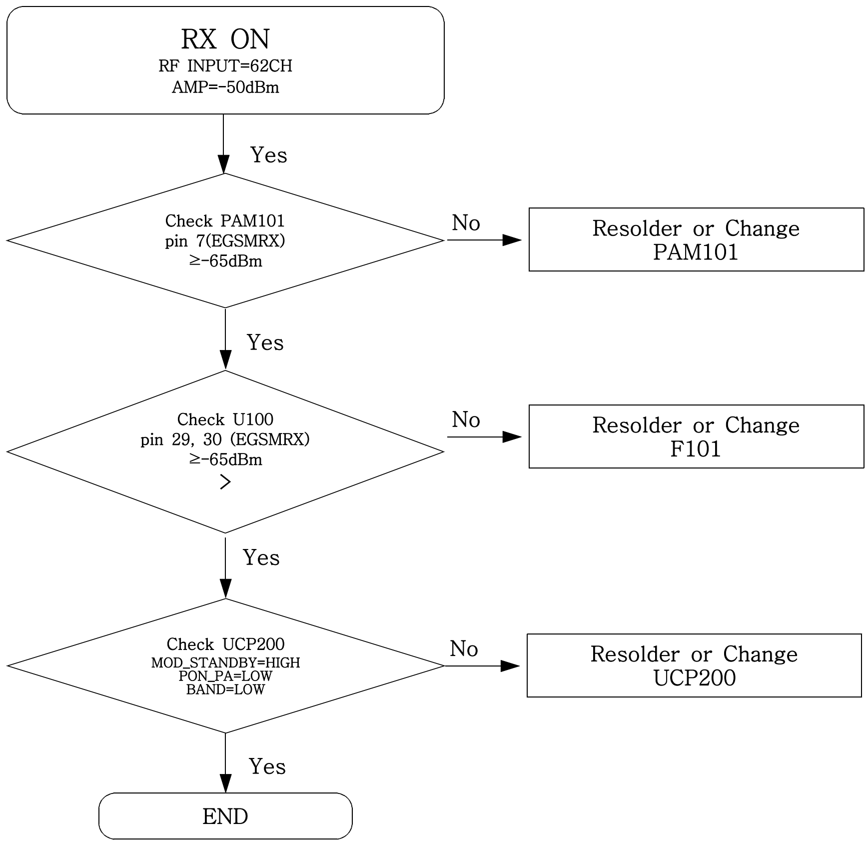
KEY LED

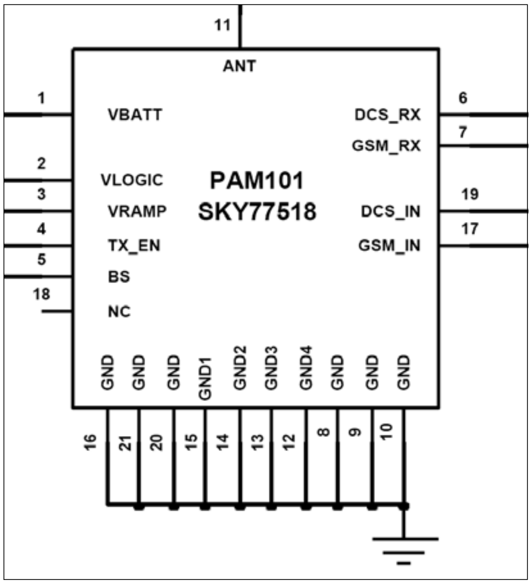

1.8V
VDD1
2.6V
+AVDD
3.3V
VCC_KEY_LED
R409
C415
C416
C422
U400
RF2VDD
RF12VBAT
RF1VDD
D1VDD
LPD1VBAT
LPVDD
HCVBAT
HCVDD
D2VDD
IOD2VBAT
IOVDD
NC
MICBIAS
_RSTHC
_IRQ
SIMIOHC
SIMCKHC
_SIMRSHC
PWREN1
PWREN2

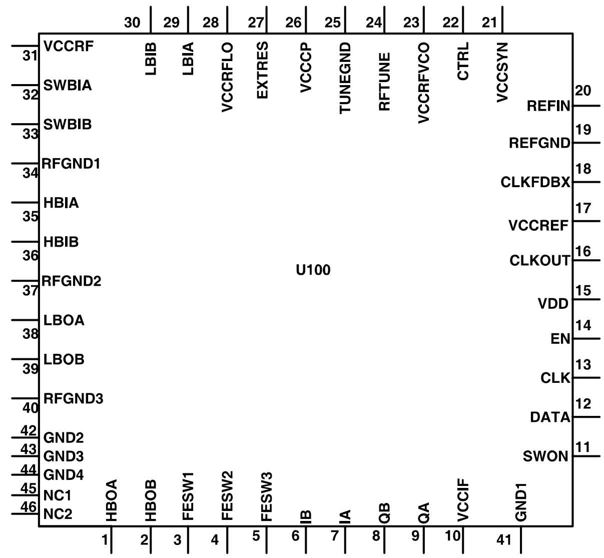

C425
C424
R412
C423
R411
R410
R408
TP4
C418
R409
C422
C416
C415
R407
C414
C412
U400
C406
C411

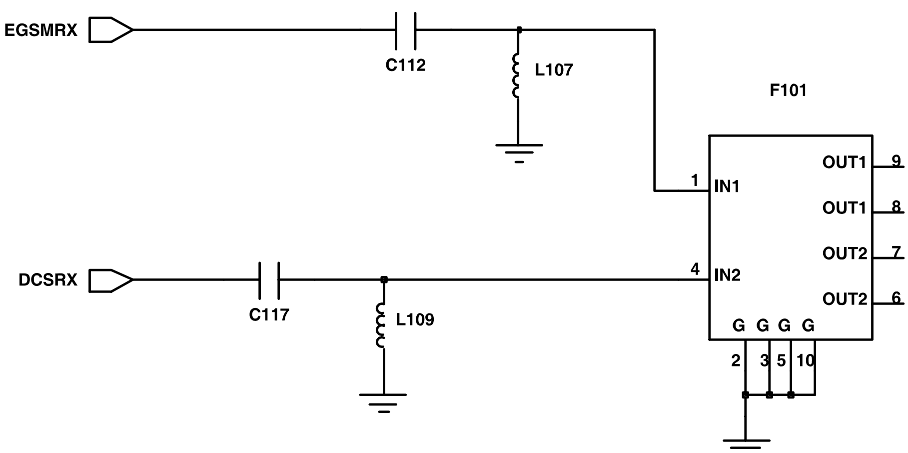

UP
LED309
R340
SOFT1
LEFT
INT
RIGHT
SOFT2
LED303
R334
LED304
R335
R341
LED310
TP219
TP215
SEND
DOWN
END
R350
CLR
LED311
DIGIT1
DIGIT2
DIGIT3
TP220
LED306
R337
LED307
R338
DIGIT4
DIGIT5
DIGIT6
LED301
R332
DIGIT7
DIGIT8
DIGIT9
LED302
R333
R336
LED305
R339
LED308
STAR
DIGIT0
SHARP

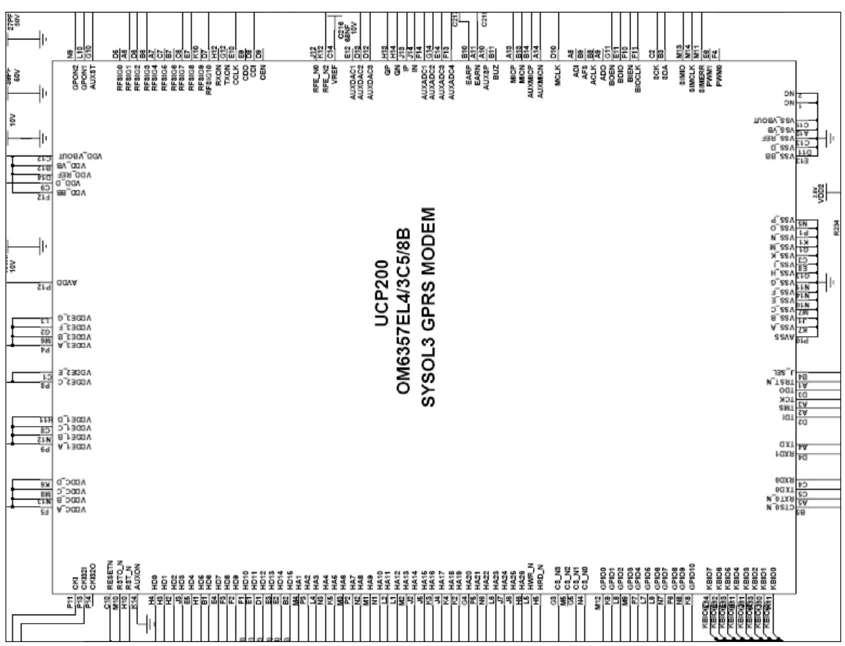
9-12. GSM Receiver

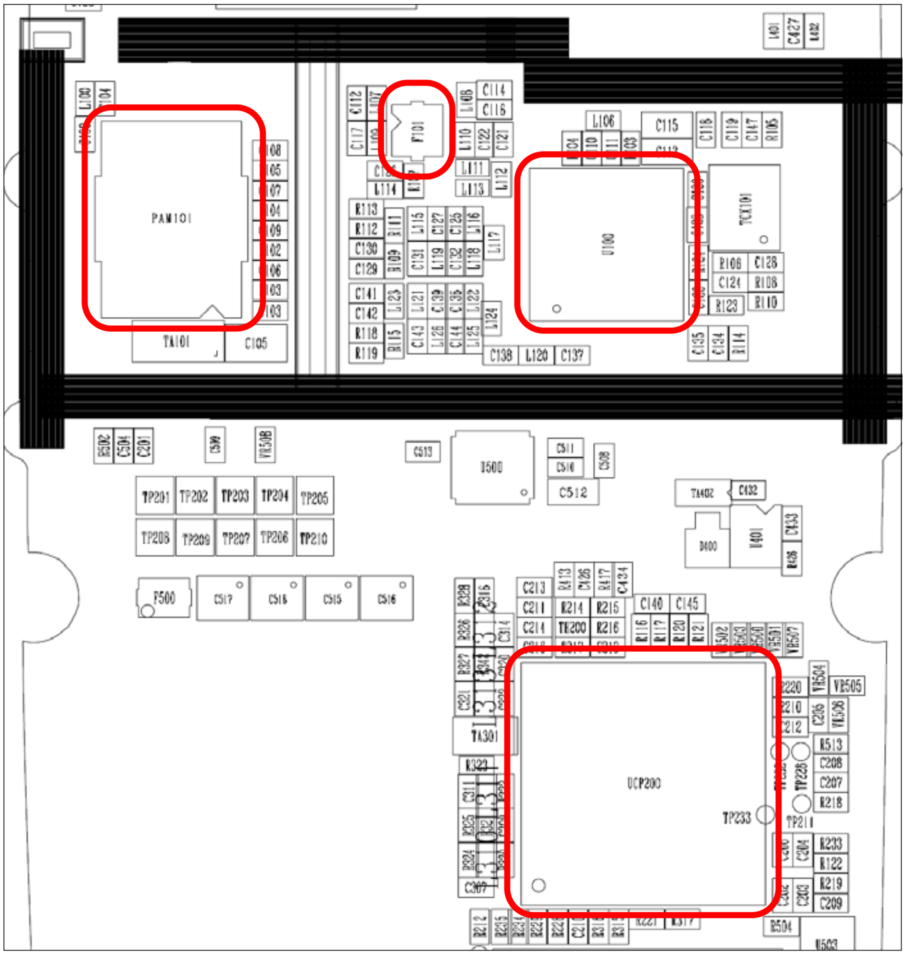



11
ANT
1
VBATT
2
VLOGIC
3
VRAMP
4
TX_EN
5
BS
18
NC
PAM101
SKY77518
DCS_RX
6
GSM_RX
7
DCS_IN
19
GSM_IN
17
GND
GND
GND
GND1
GND2
GND3
GND4
GND
GND
GND
16
21
20
15
14
13
12
8
9
10

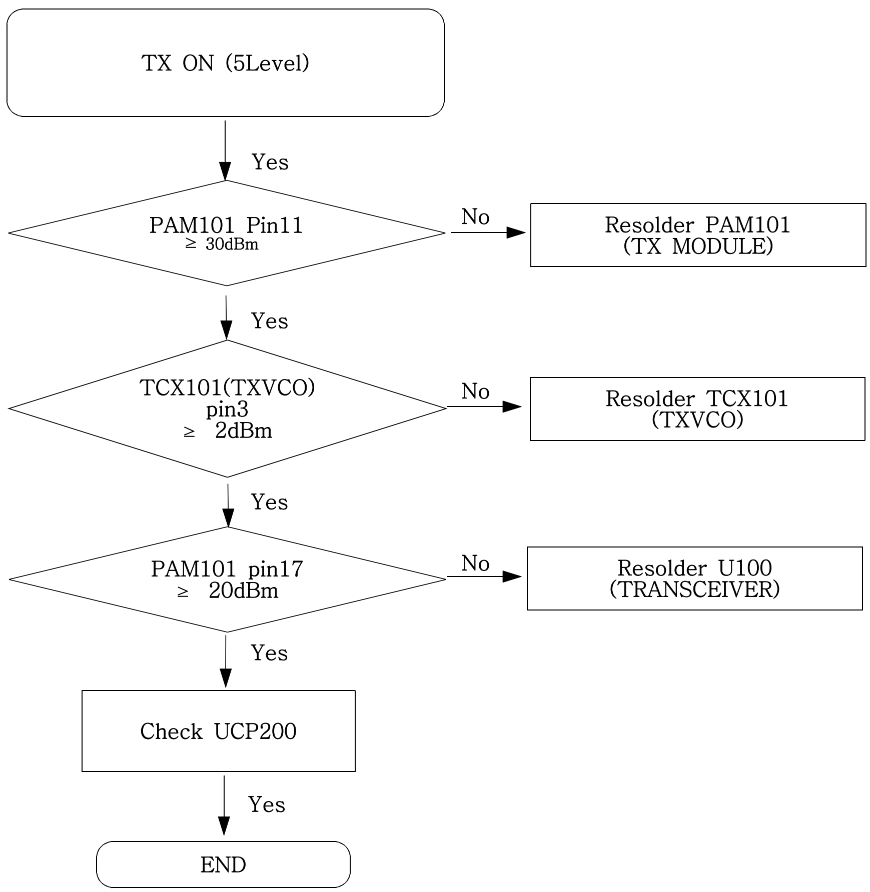

30 29 28 27 26 25 24 23 22 21
LBIB
LBIA
VCCRFLO
EXTRES
VCCCP
TUNEGND
RFTUNE
VCCRFVCO
CTRL
VCCSYN
31 VCCRF
32 SWBIA
33 SWBIB
34 RFGND1
35 HBIA
36 HBIB
37 RFGND2
38 LBOA
39 LBOB
40 RFGND3
42 GND2
43 GND3
44 GND4
45 NC1
46 NC2
U100
REFIN 20
REFGND 19
CLKFDBX 18
VCCREF 17
CLKOUT 16
VDD 15
EN 14
CLK 13
DATA 12
SWON 11
HBOA
HBOB
FESW1
FESW2
FESW3
IB
IA
QB
QA
VCCIF
GND1
1 2 3 4 5 6 7 8 9 10 41

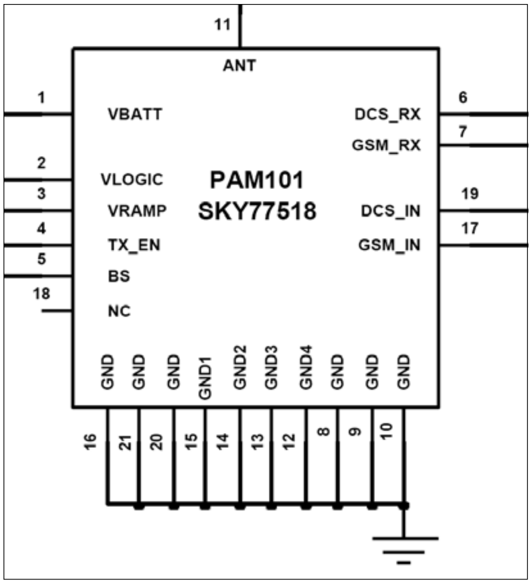

EGSMRX
C112
L107
F101
1
IN1
4
IN2
OUT1 9
OUT1 8
OUT2 7
OUT2 6
G G G G
2 3 5 10
DCSRX
C117
L109

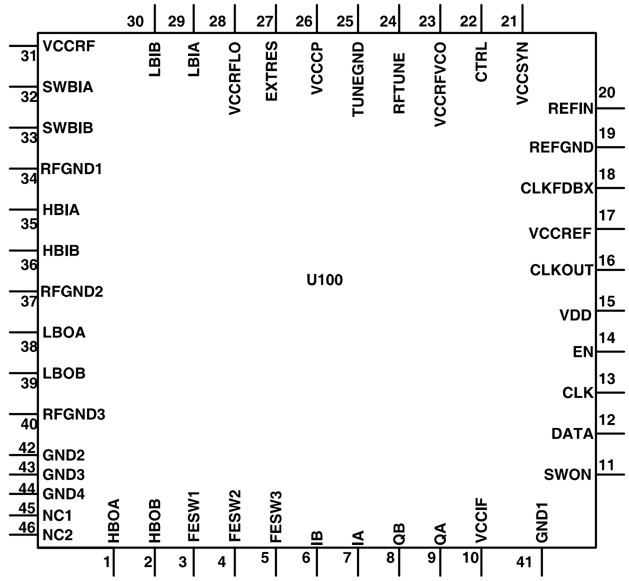

UCP200
OM6357EL4/3C5/8B
SYSOL3 GPRS MODEM

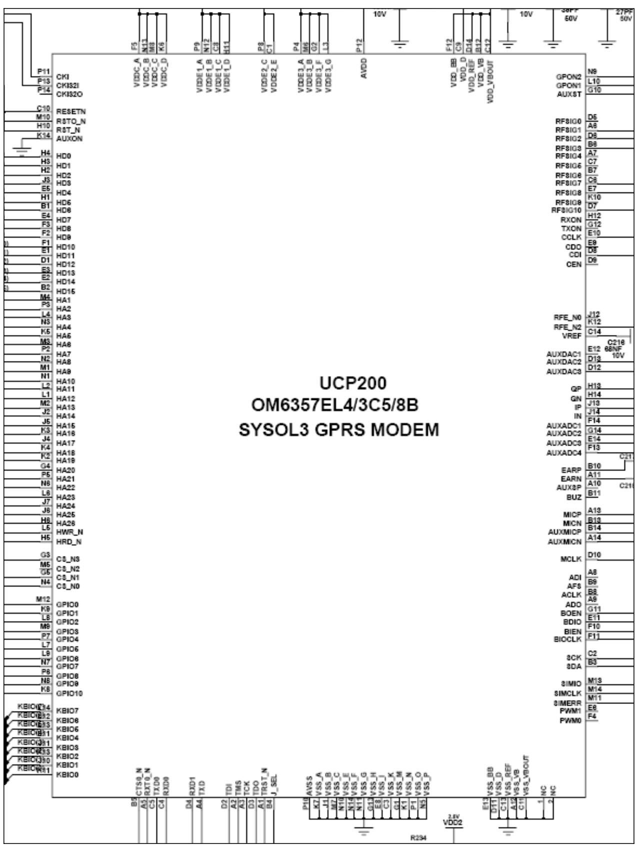


9-13. GSM Transmitter

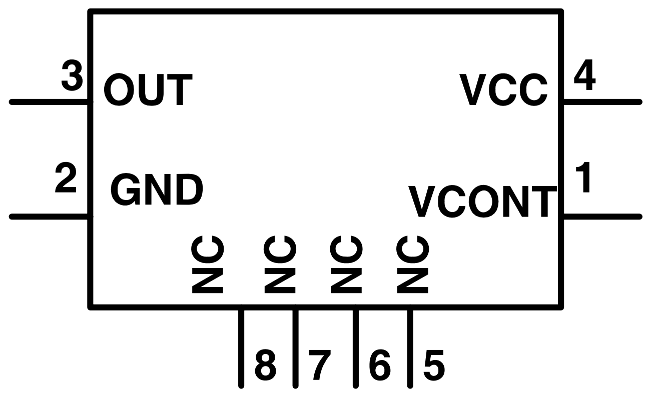


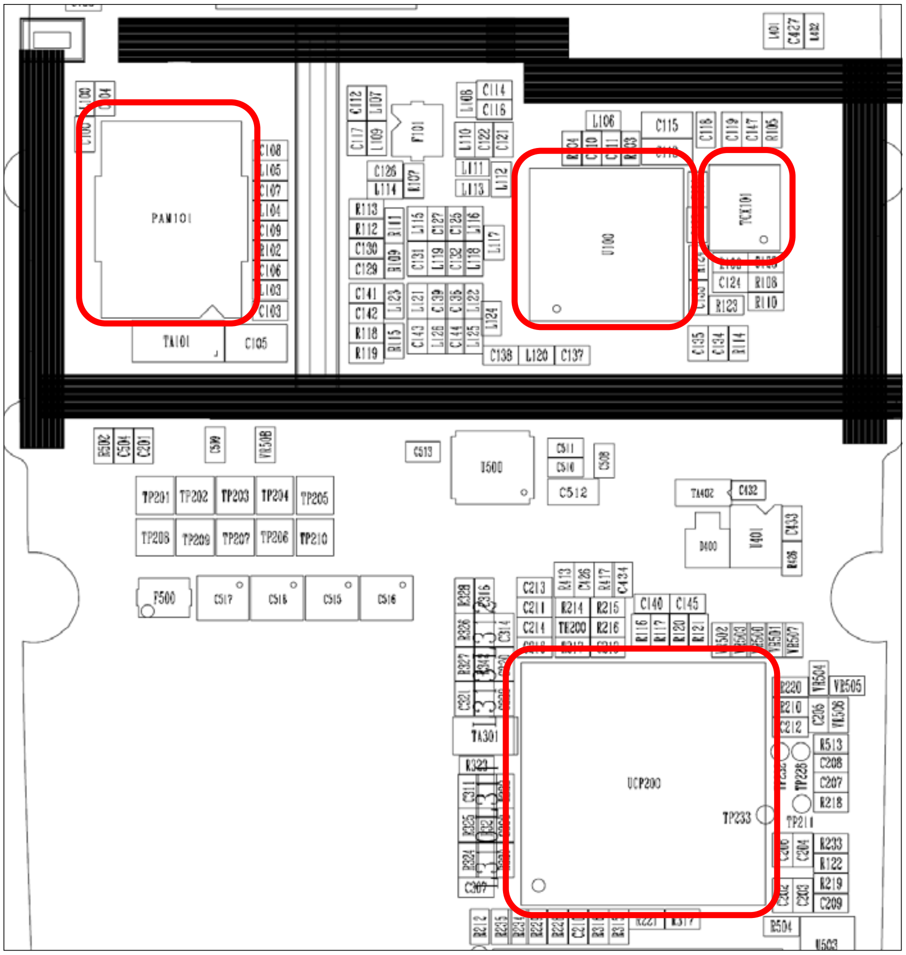

PAM101
SKY77518
ANT
11
1 VBATT
2 VLOGIC
3 VRAMP
4 TX_EN
5 BS
18 NC
6 DCS_RX
7 GSM_RX
19 DCS_IN
17 GSM_IN
GND GND GND GND1 GND2 GND3 GND4 GND GND GND
16 21 20 15 14 13 12 8 9 10


U100
30 LBIB
29 LBIA
28 VCCRFLO
27 EXTRES
26 VCCCP
25 TUNEGND
24 RFTUNE
23 VCCRFVCO
22 CTRL
21 VCCSYN
31 VCCRF
32 SWBIA
33 SWBIB
34 RFGND1
35 HBIA
36 HBIB
37 RFGND2
38 LBOA
39 LBOB
40 RFGND3
42 GND2
43 GND3
44 GND4
45 NC1
46 NC2
20 REFIN
19 REFGND
18 CLKFDBX
17 VCCREF
16 CLKOUT
15 VDD
14 EN
13 CLK
12 DATA
11 SWON
1 HBOA
2 HBOB
3 FESW1
4 FESW2
5 FESW3
6 IB
7 IA
8 QB
9 QA
10 VCCIF
41 GND1

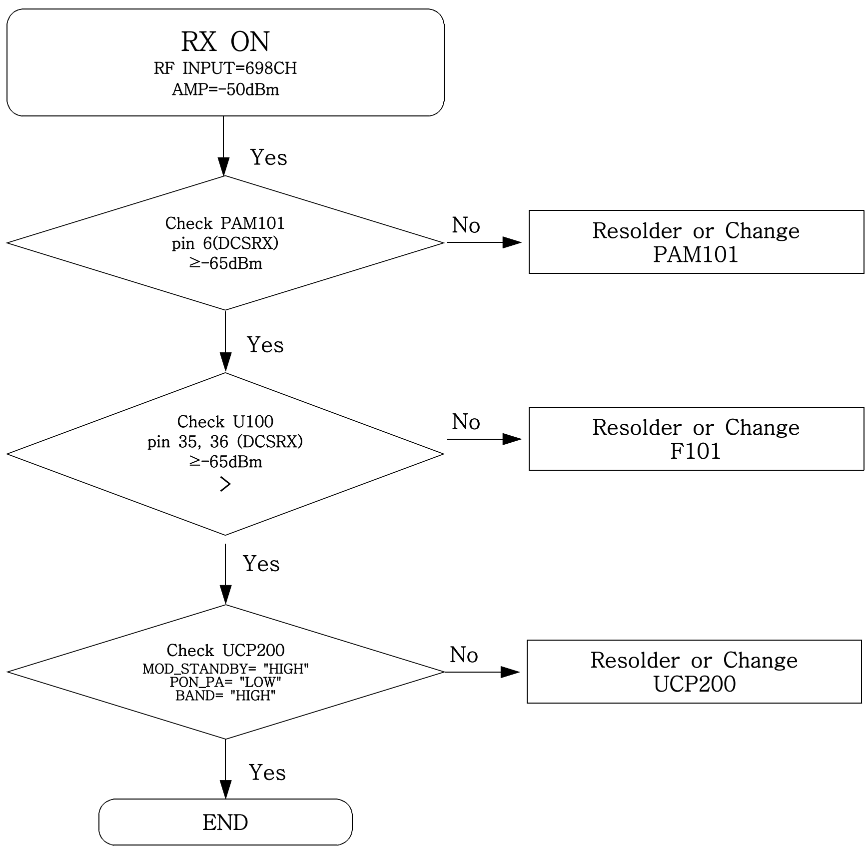

UCP200
OM6357EL4/3C5/8B
SYSOL3 GPRS MODEM

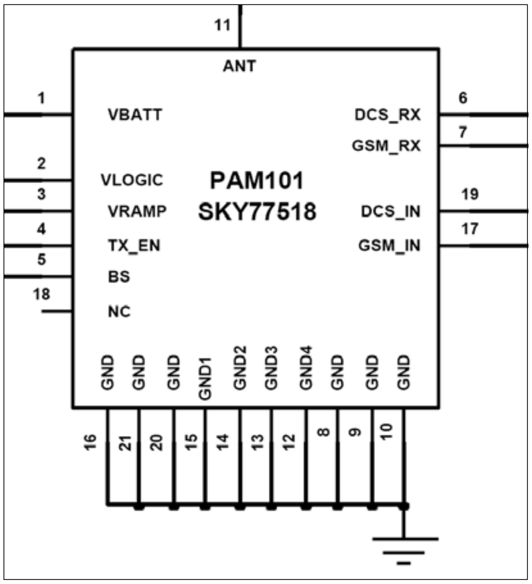
TCX101

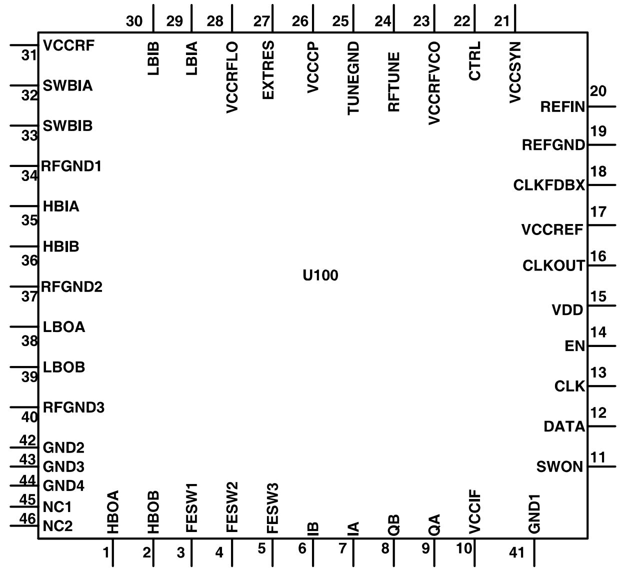

3 OUT
2 GND
VCC 4
VCONT 1
NC NC NC NC
8 7 6 5

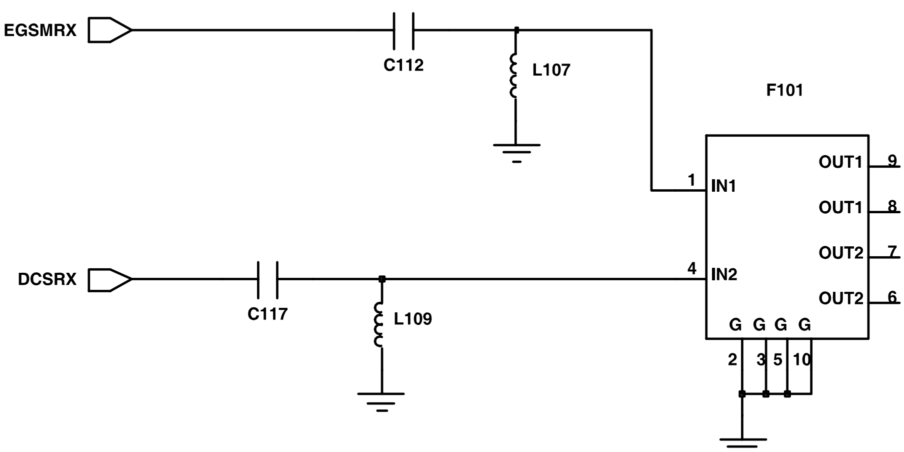

PAM101
U100
TCX101
UCP200

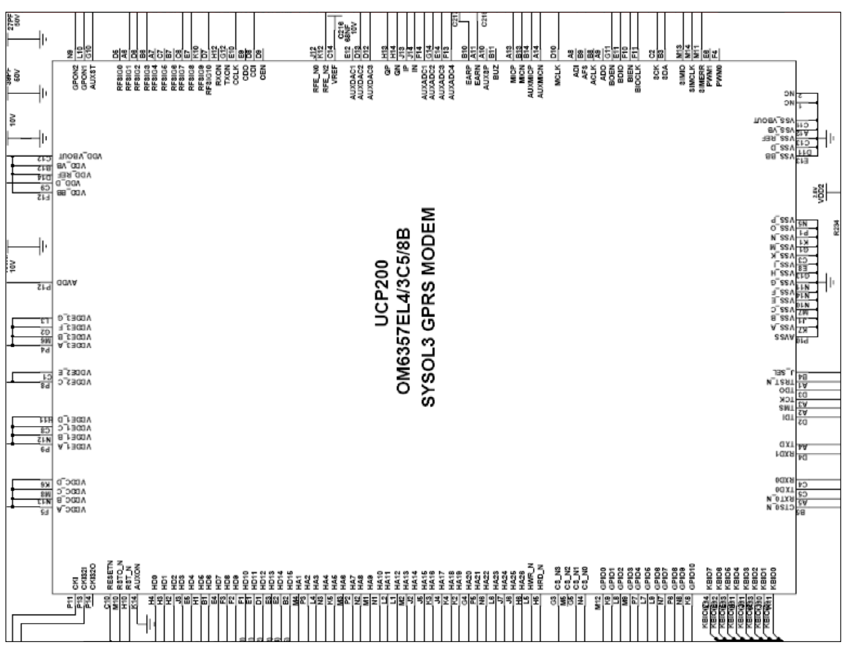
9-14. DCS Receiver

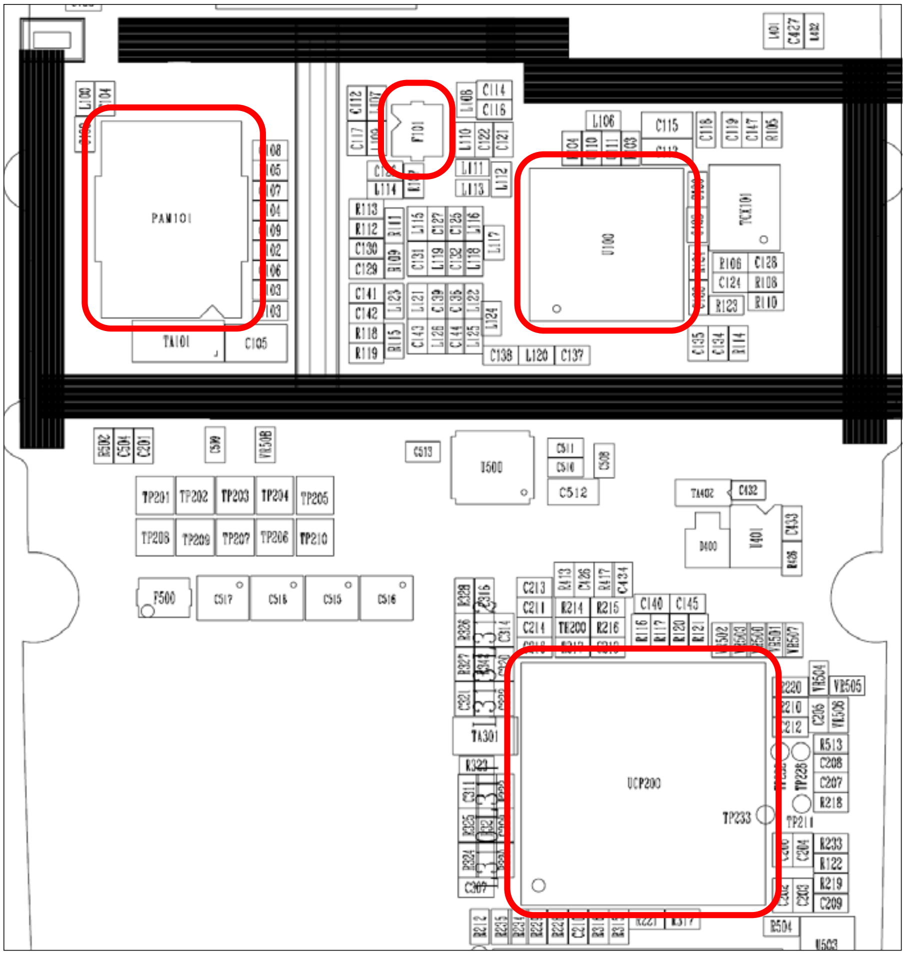



ANT
11
1
VBATT
2
VLOGIC
3
VRAMP
4
TX_EN
5
BS
18
NC
PAM101
SKY77518
DCS_RX
6
GSM_RX
7
DCS_IN
19
GSM_IN
17
GND
GND
GND
GND1
GND2
GND3
GND4
GND
GND
GND
16
21
20
15
14
13
12
8
9
10

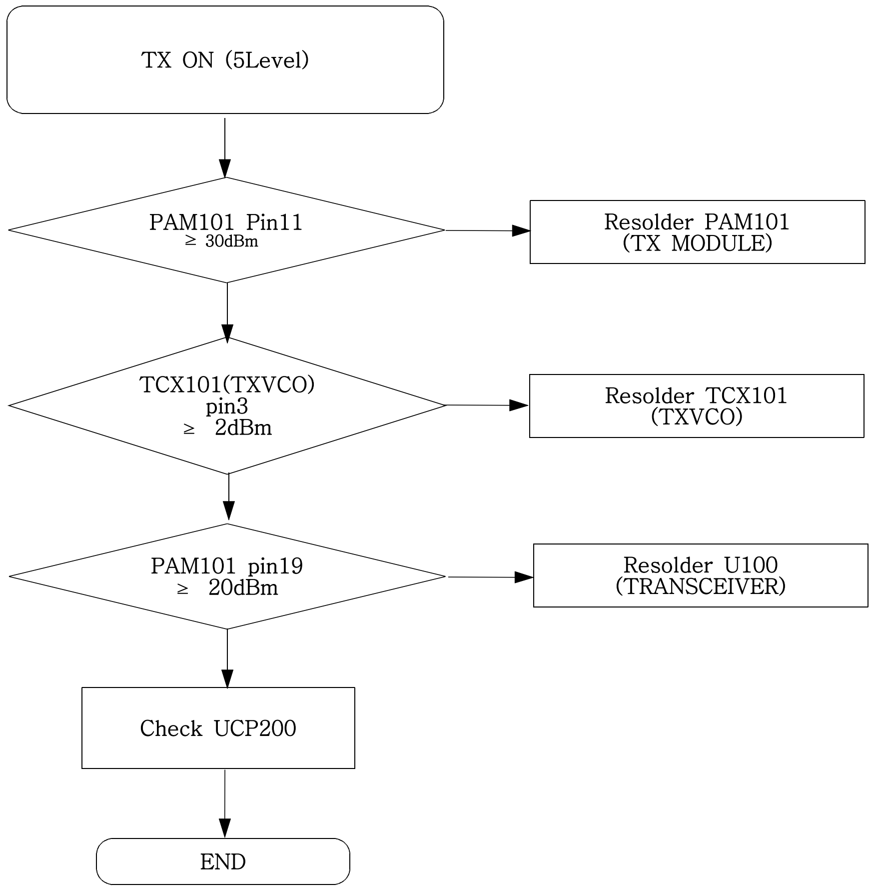

U100
31 VCCRF
32 SWBIA
33 SWBIB
34 RFGND1
35 HBIA
36 HBIB
37 RFGND2
38 LBOA
39 LBOB
40 RFGND3
42 GND2
43 GND3
44 GND4
45 NC1
46 NC2
30 LBIB
29 LBIA
28 VCCRFLO
27 EXTRES
26 VCCCP
25 TUNEGND
24 RFTUNE
23 VCCRFVCO
22 CTRL
21 VCCSYN
20 REFIN
19 REFGND
18 CLKFDBX
17 VCCREF
16 CLKOUT
15 VDD
14 EN
13 CLK
12 DATA
11 SWON
1 HBOA
2 HBOB
3 FESW1
4 FESW2
5 FESW3
6 IB
7 IA
8 QB
9 QA
10 VCCIF
41 GND1

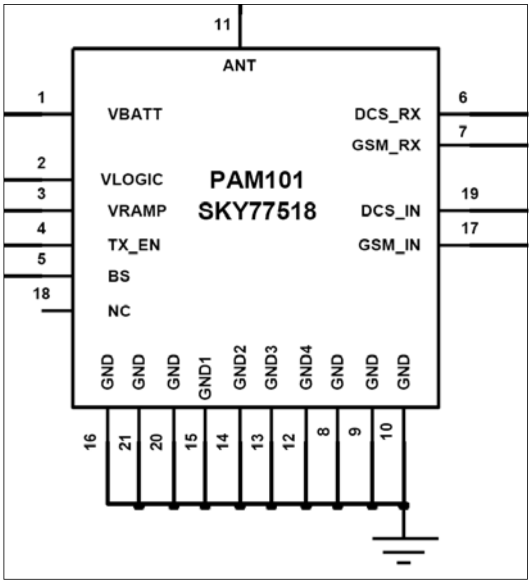

EGSMRX
C112
L107
F101
DCSRX
C117
L109
1 IN1
4 IN2
OUT1 9
OUT1 8
OUT2 7
OUT2 6
G G G G
2 3 5 10

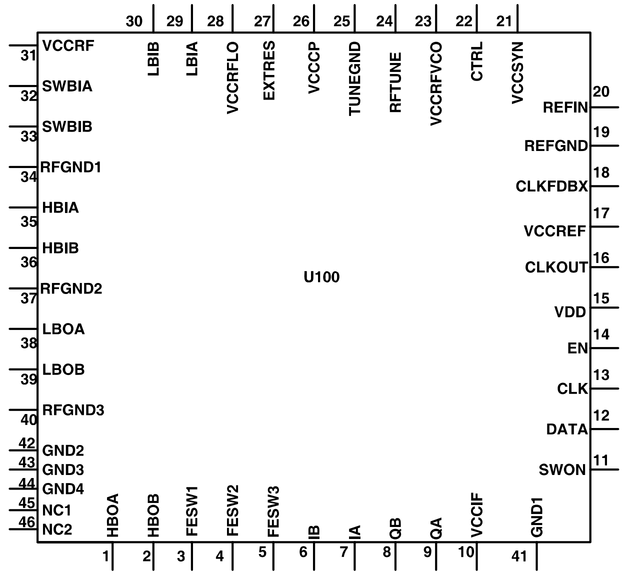

UCP200
OM6357EL4/3C5/8B
SYSOL3 GPRS MODEM

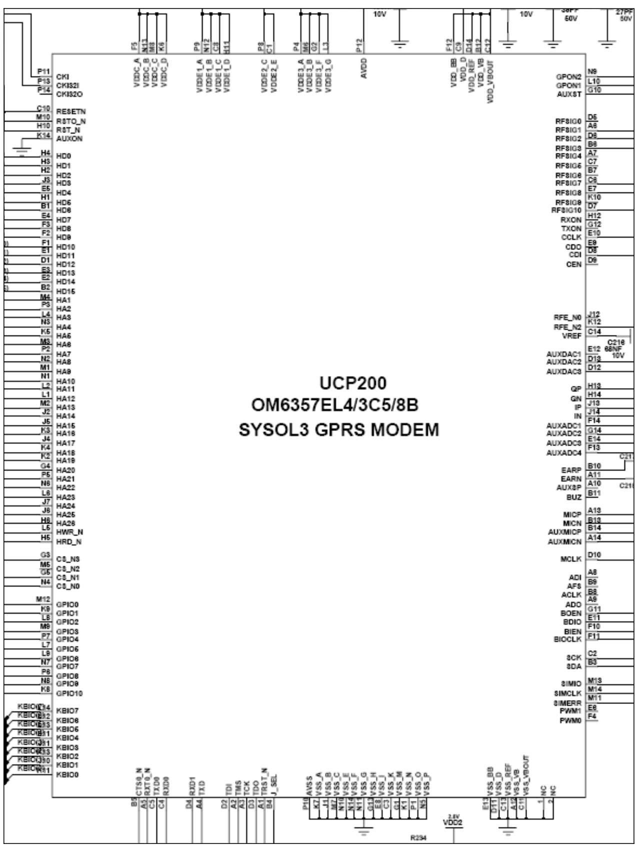

PAM101
U100
TCX101
UCP200
TA101
C105
U500
TA301
TP233

9-15. DCS Transmitter

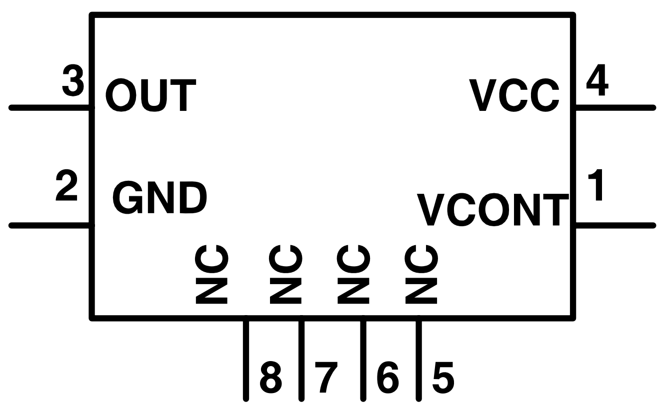


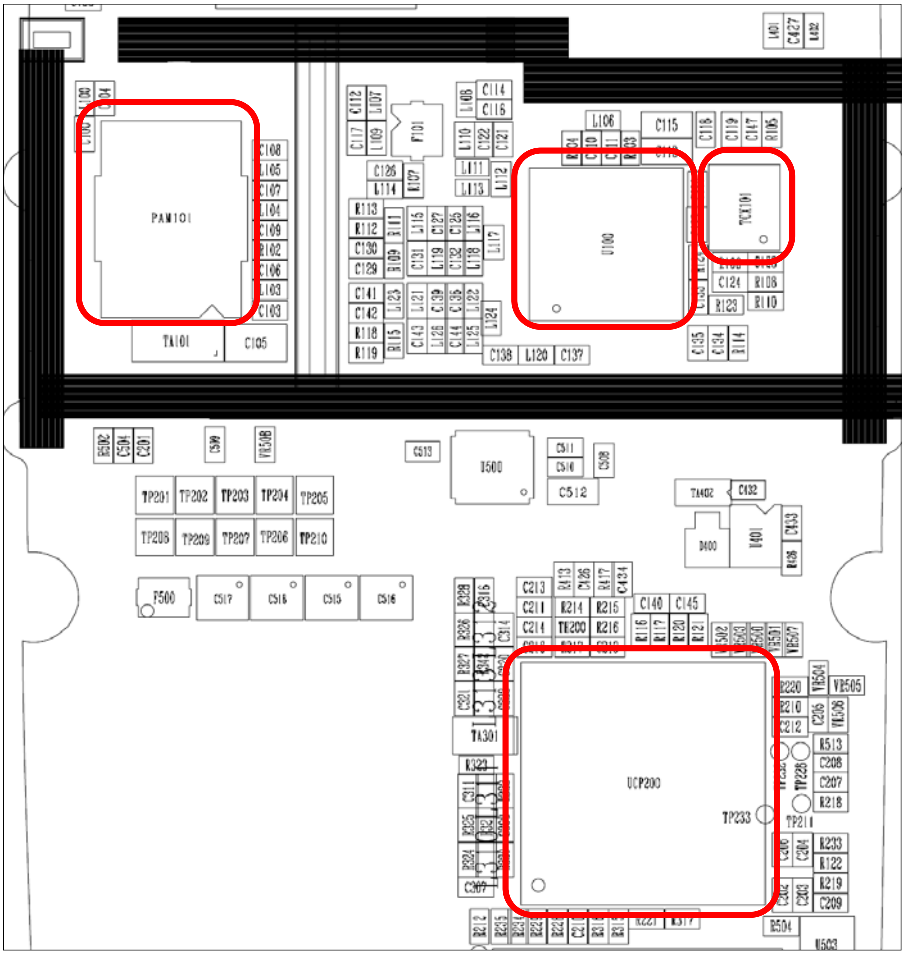

11
ANT
1
VBATT
DCS_RX
6
GSM_RX
7
2
VLOGIC
PAM101
SKY77518
3
VRAMP
19
DCS_IN
4
TX_EN
GSM_IN
17
5
BS
18
NC
GND
GND
GND
GND1
GND2
GND3
GND4
GND
GND
GND
16
21
20
15
14
13
12
8
9
10


30
29
28
27
26
25
24
23
22
21
LBIB
LBIA
VCCRFLO
EXTRES
VCCCP
TUNEGND
RFTUNE
VCCRFVCO
CTRL
VCCSYN
31 VCCRF
32 SWBIA
33 SWBIB
34 RFGND1
35 HBIA
36 HBIB
37 RFGND2
38 LBOA
39 LBOB
40 RFGND3
42 GND2
43 GND3
44 GND4
45 NC1
46 NC2
REFIN 20
REFGND 19
CLKFDBX 18
VCCREF 17
CLKOUT 16
VDD 15
EN 14
CLK 13
DATA 12
SWON 11
U100
HBOA
HBOB
FESW1
FESW2
FESW3
IB
IA
QB
QA
VCCIF
GND1
1
2
3
4
5
6
7
8
9
10
41


UCP200
OM6357EL4/3C5/8B
SYSOL3 GPRS MODEM

TCX101


3
OUT
VCC
4
2
GND
VCONT
1
NC
NC
NC
NC
8
7
6
5


PAM101
U100
TCX101
UCP200
TA101
C105
I500
C512
TP201
TP202
TP203
TP204
TP205
TP208
TP209
TP207
TP206
TP210
F500
TA301
TP233

10. Reference data

Reference Abbreviate

- **ARFCN** : Absolute Radio Frequency Channel Number
- **BER** : Bit Error Rate
- **BPSK**: Binary Phase Shift Keying
- **ESD** **:** Electrostatically Sensitive Devices
- **ETSI**: European Telecommunications Standards Institute
- **MS**: Mobile Station
- **QPSK**: Quadrature Phase Shift Keying
- **RF** : Radio Frequency
- **TDMA** : Time Division Multiple Access

SAMSUNG
ELECTRONICS

SAMSUNG

GSPN (Global Service Partner Network)

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North America	service.samsungportal.com
Latin America	latin.samsungportal.com
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Asia	asia.samsungportal.com
Mideast & Africa	mea.samsungportal.com

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